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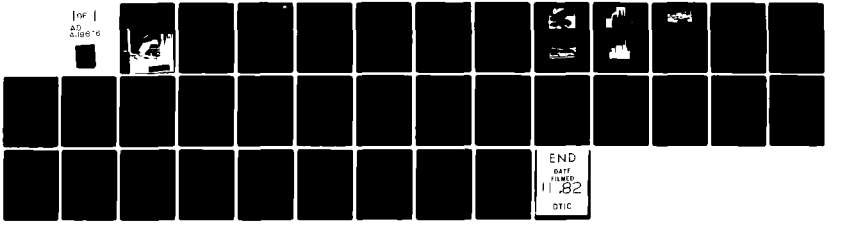

CRREL
REPORT 82-20

US Army Corps
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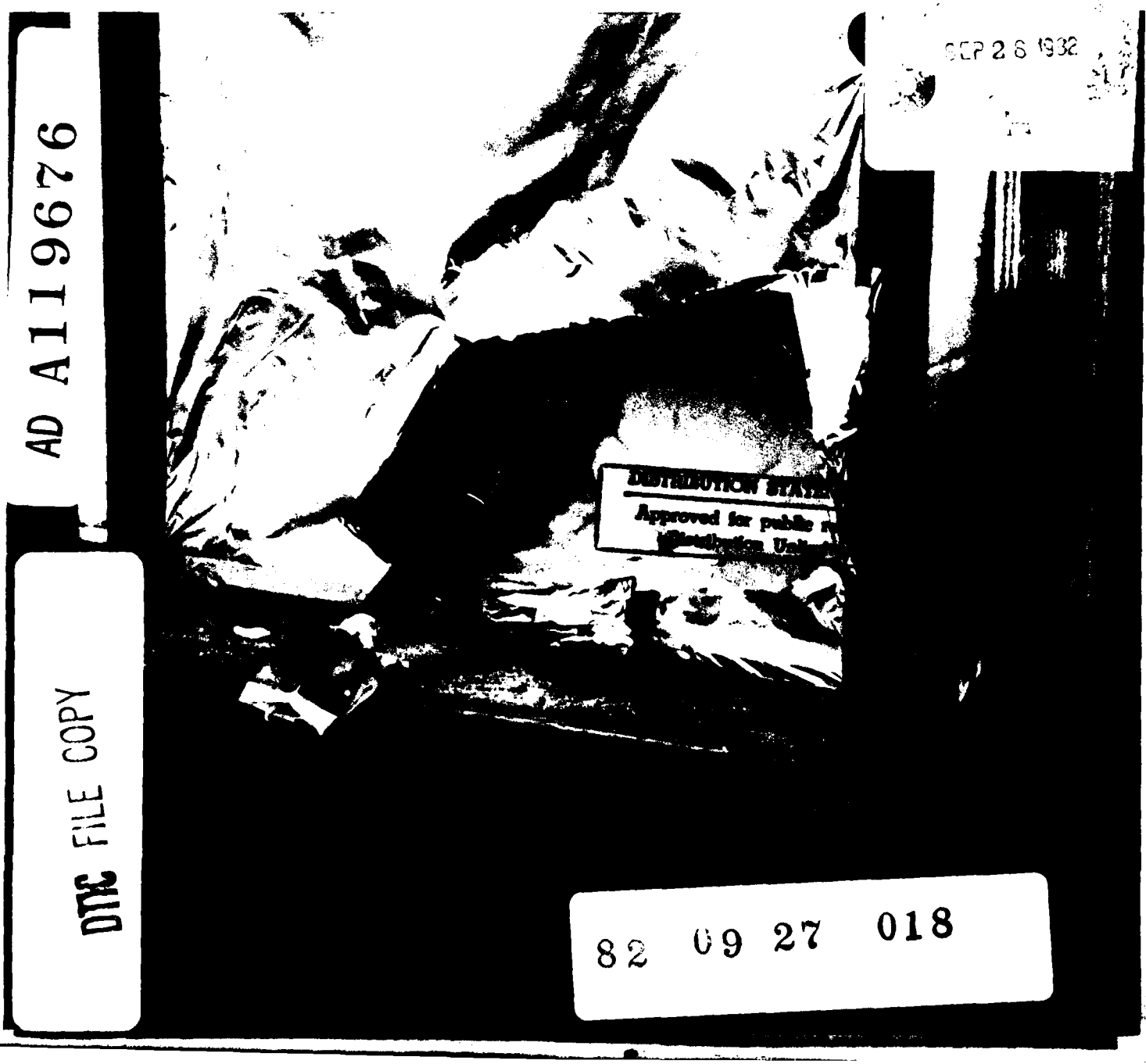
Deceleration of projectiles in snow



For conversion of SI metric units to U.S./ British customary units of measurement consult ASTM Standard E380, Metric Practice Guide, *published by the American Society for Testing and Materials, 1916 Race St., Philadelphia, Pa. 19103.*

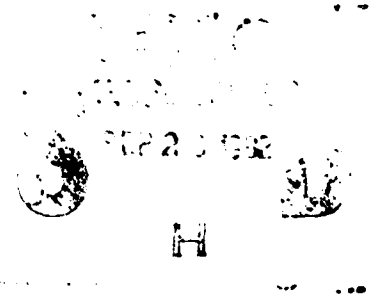
Cover: *M374 81-mm projectile after impact into a snow target. Aluminum foil was used to protect snow sample from winds caused by motion of the centrifuge arm.*

CRREL Report 82-20

August 1982

Deceleration of projectiles in snow

Donald G. Albert and Paul W. Richmond III



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Instrumented M374 projectiles were launched into snow, nylon, and Styrofoam targets using a 10.7-m radius centrifuge. For snow of 410-kg/m^3 density, the 3.1-kg test projectile experienced decelerations of approximately 220, 400, and 550 m/s^2 (at a depth of 0.1 m) for initial impact velocities of 15, 30 and 46 m/s respectively. These values disagree with values predicted from a simple hydrodynamic drag force approximation. The decelerations measured for snow targets were always greater than those measured for nylon shaving targets (of density 120 kg/m^3) indicating that this material is not a good analog for snow of the density used in these tests.

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PREFACE

This report was prepared by Donald G. Albert, Geophysicist, Geophysical Sciences Branch, Research Division, and Paul W. Richmond III, Mechanical Engineer, Applied Research Branch, Experimental Engineering Division, U.S. Army Cold Regions Research and Engineering Laboratory. Funding was provided by DA Project 4A762730AT42, Technical Area B, Work Unit 2, *Cold Regions Performance of Seismic-Acoustic Sensor Systems* and Work Unit 9, *Fuze Action in Snow.*

The authors acknowledge the assistance of George Aitken, Glenn Durell, Dennis Farrell, Gregor Fellers, and Gary Decoff of CRREL and the many personnel at Sandia Laboratories who made this study possible. Dr. George Swinzow and David Cole of CRREL provided many useful comments on an earlier version of this report. The authors also thank Dr. Malcom Mellor and Jacqueline Richter of CRREL, and A. Garcia of U.S. Army Armament Research and Development Command (ARRADCOM) for technical reviews.

CONTENTS

ILLUSTRATIONS

TABLES

DECELERATION OF PROJECTILES IN SNOW

Donald G. Albert and Paul W. Richmond III

INTRODUCTION

Snow greatly reduces the effectiveness of impact-fuzed projectiles. In order to obtain maximum effectiveness on a winter battlefield, to design new fuzes and to evaluate current equipment, detailed knowledge of the snow penetration process is required. Fuze performance under various impact conditions can be studied by both direct and reverse ballistic test procedures (Lascher et al. 1975). The direct test subjects the fuzed projectile to realistic launch accelerations, but has the problem of accurately locating the point of impact and requires telemetry to obtain data from on-board transducers. The reverse ballistic technique, where the target is fired into a stationary projectile, has the advantage of allowing instrumentation in the projectile to be directly wired to recording equipment. However, this technique is difficult to use with snow because of its compressibility (Todisco et al. 1980).

The centrifugal launch method used here to test impact-fuzed projectiles is unique in that it provides advantages normally found in both of the above techniques. Sensors in the projectile are directly wired to recording equipment, and the target is not accelerated as in the reverse ballistic technique. The point of impact is also easily controlled using this method.

These tests provided measurements of the deceleration of a projectile when it hits a snow target. The deceleration data were smoothed by using a low pass digital filter and integrated to obtain depth of penetration. The data were then compared with a modified hydrodynamic drag equation (Kornhauser 1969) that has been used to describe fuze impact into both snow and mud. Kovacs (1971) and Davis (1975) also used similar equations to analyze fuze performance.

TEST PROCEDURE

The centrifuge facility used for these tests (Fig. 1) is located at the Sandia Laboratories in Albuquerque, New Mexico. Otts (1973) described the centrifuge and gave an example of its use as an impact testing machine. It has a 10.7-m radius and is capable of subjecting a test item to tangential velocities up to 164 m/s.

An inert M374 81-mm projectile with an M524 fuze was used in these tests. The fuze was instrumented by replacing the striker and explosive train with a piezoresistive accelerometer mounted on an aluminum plug (Fig. 2). The instrumentation lead was run through the projectile body and out of the tail section. The mass of the projectile was 6.2 kg.

Targets made from snow, nylon shavings (a candidate material to simulate snow), and Styrofoam panels were used in these tests. The snow targets were prepared by sifting snow through a 6-mm mesh screen into 610-mm square by 150-mm deep boxes constructed of 50-mm thick Styrofoam (Fig. 3). These targets were then aged at least 24 hours to allow the snow to sinter. Snow densities of about 400 kg/m^3 were obtained. The nylon targets were prepared by pouring 10-mm long nylon shavings into the 150-mm deep Styrofoam boxes. A piece of cheesecloth was placed over the surface of the shavings to keep them in place when the box was turned on its side for the

Figure 1. View of the 10.7-m centrifuge at Sandia Laboratories, Albuquerque, New Mexico.

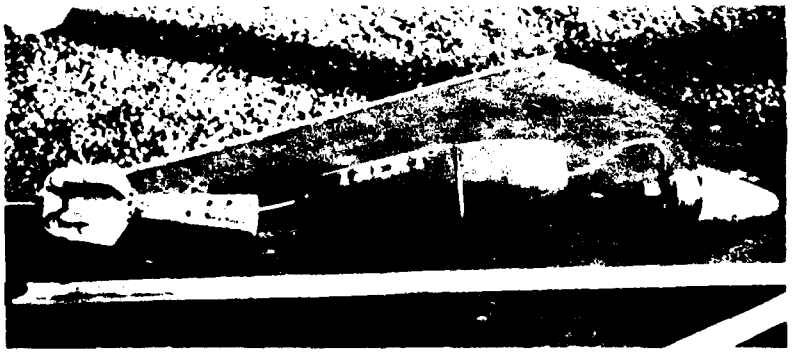

Figure 2. Close-up view of instrumented M524 fuze and M374 81-mm projectile.

Figure 3. Preparation of the snow target.

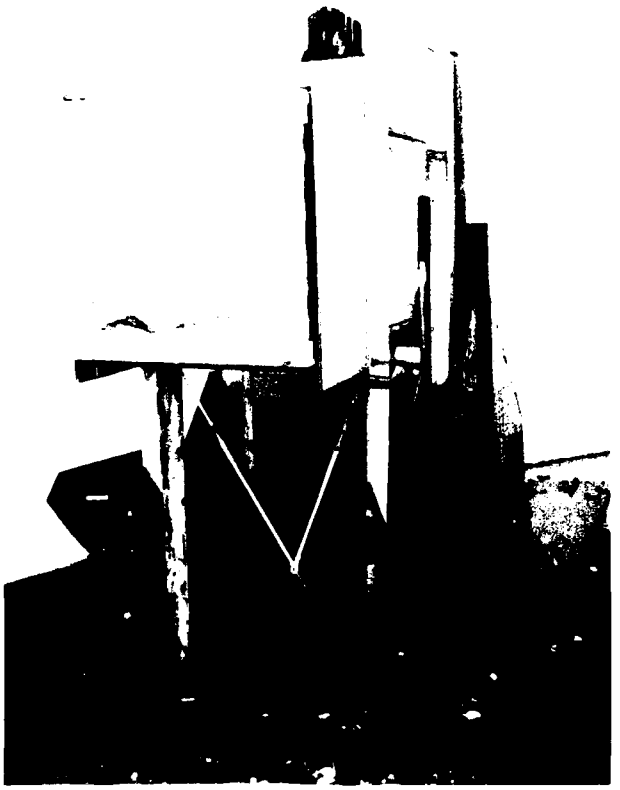

Figure 4. Snow target, with aluminum foil windscreen in place, positioned in stand prior to test.

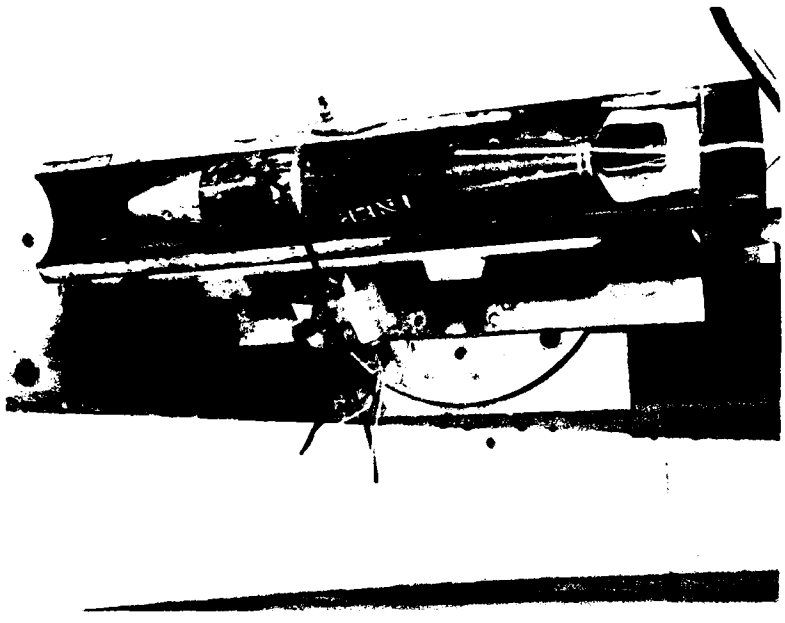

Figure 5. Close-up view of test projectile mounted on centrifuge arm. Note steel cable holding projectile to arm and explosive cable-cutter used to release projectile.

test. Three 50-mm thick panels of Styrofoam were placed in the target boxes for a third series of tests. The Styrofoam targets were used to check the operation of the measuring equipment.

The target box was placed in a rigid stand located on a tangent to the arc made by the centrifuge arm and positioned to ensure a near normal impact (Fig. 4). An aluminum foil wind screen was placed 150 mm in front of the snow target to protect the snow surface from wind damage. Alternating layers of Styrofoam and plywood were placed behind the target to stop the projectile.

The instrumented projectile was mounted on the centrifuge as shown in Figure 5. When the centrifuge achieved the desired velocity, the projectile was released so that it hit the target. The accelerometer output was amplified and recorded on an analog tape recorder. The frequency response of this system was flat to 5 kHz. Data were obtained for impact velocities ranging from 15 to 90 m/s (50 to 300 ft/s). Preliminary results from this experiment have been presented by Fulton (1979) and by Aitken et al. (1980).

DATA REDUCTION

The test data were digitized for computer analysis using a sampling rate of 40 kHz. Input signals of known acceleration values were used to calibrate the system.

A typical acceleration vs time signal for a snow impact at 30 m/s is shown in Figure 6. Projectile impacts with the wind screen, the snow surface, and the barrier behind the snow target are identified in the figure. The travel times between these impacts were used to verify the identifications given in the figure.

The signal was passed through a zero phase low pass digital filter with a cutoff frequency of 5 kHz, corresponding to the bandwidth of the analog recording equipment. The filter removes any high frequency noise produced by the digitizing process (Otnes and Enochson 1978) without introducing time shifts to the signal. This latter property of the filter is quite important. Computer programs to apply digital Butterworth filters to signals are readily available (Stearns 1975); however, these filters will introduce a frequency-dependent phase shift, which causes the output signal to be delayed in time by an amount proportional to the frequency of each component. To remove the phase shift, the filter was first applied to the signal, obtaining a phase-shifted, filtered output. The filter output was then reversed and the signal passed through the filter again. This procedure has two effects: 1) the final output will not be phase (or time) shifted, since the phase shift caused by the second pass will be the negative of the phase shift caused by the first pass, and 2) the final

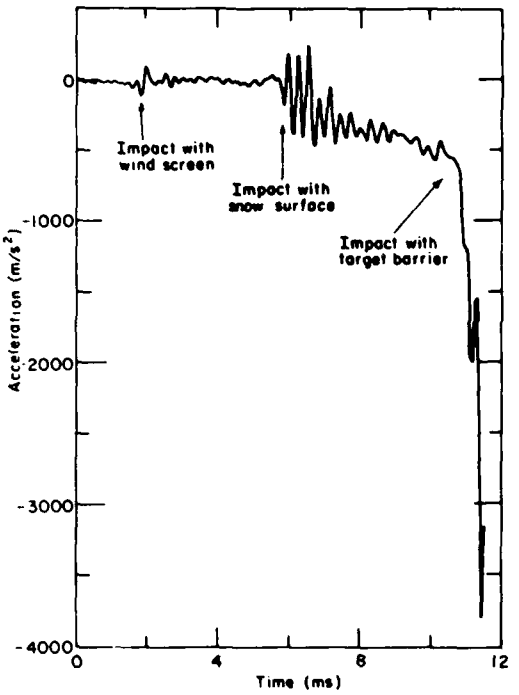

Figure 6. Acceleration vs time for 30-m/s impact of projectile into 390-kg/m^3 density snow target.

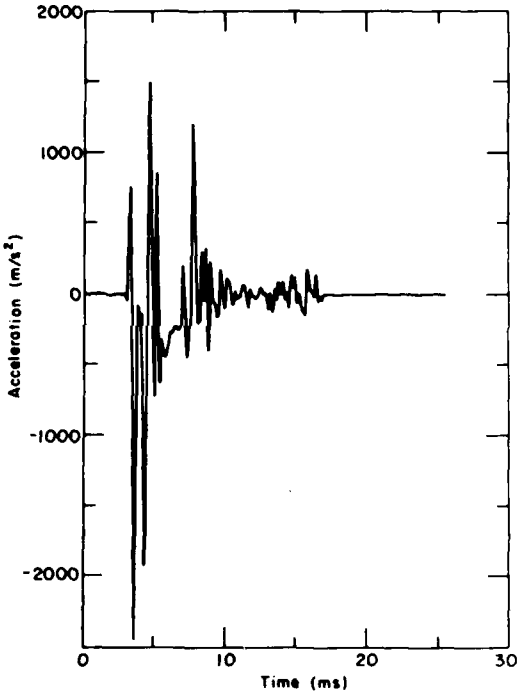

Figure 7. Acceleration vs time response of projectile, suspended by a string, to hammer tap.

amplitude response of the filter will be the square of the amplitude response of a single filter operation. After filtering, however, some high frequency noise superimposed on the snow impact signal was still visible. This noise cannot be attributed to the digitizing process and therefore must have some physical cause.

A possible source of this high frequency noise is resonant vibration of the projectile. A test was conducted to ascertain whether or not the resonant frequency of the projectile was of the same order as the high frequency noise on the data traces. The projectile was suspended from a string attached to its tail and then tapped with a hammer. The output from the accelerometer was then digitized and is shown in Figure 7. The amplitude vs frequency plot obtained from the Fourier transform of this signal is shown in Figure 8. The peak amplitude is around 1.5 kHz, with a significant amount of power located at frequencies up to about 3.5 kHz, suggesting that resonant vibration of the projectile could be the cause of the noise on the data traces. In most cases, it was found that a low pass filter with a cutoff frequency of around 1 kHz was sufficient to remove this high frequency noise. For the higher impact

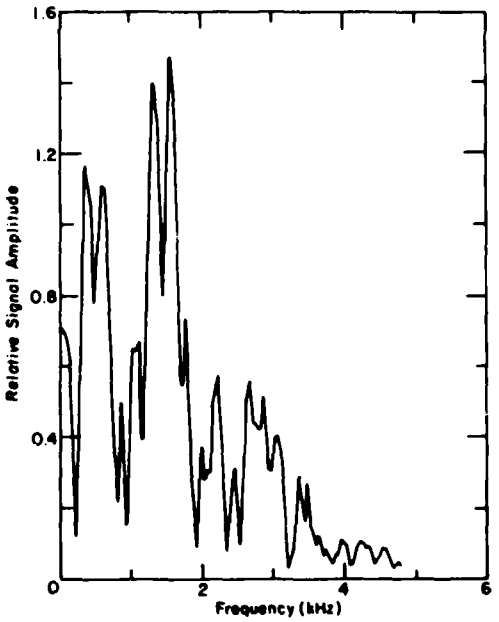

Figure 8. Amplitude vs frequency curve from data in Figure 7.

velocities, however, the low pass filtering procedure did not give usable results even if a lower cutoff frequency was used.

The poorer quality of the data at higher impact velocities is due to two factors. First, as the impact velocity increases, the amplitude of the resonant vibrations increases, thereby decreasing the signal-to-noise ratio. This effect is analogous to increasing the force of the hammer blow in the experiment discussed above. Second, the data are degraded because the impacting time interval decreases significantly. For a given impact velocity V_o, the number of significant data points N obtained during an impact with a target of thickness d is limited by the bandwidth of the recording instrument B and is given by

$$N = \frac{d}{V_o} B . \qquad (1)$$

For this experiment B = 5 kHz and d = 0.15 m. For a relatively low impact velocity of 30 m/s, N is 25, but for a high velocity of 90 m/s the number of data points is reduced to only eight. It is difficult to accurately define the deceleration of the projectile with only eight data points available for the event. With noise superimposed on the signal, accurate measurement of the deceleration with this limited number of data points becomes impossible.

After filtering to remove the noise, the deceleration data were integrated to obtain curves of depth of penetration as a function of time. The penetration vs time data and the original deceleration vs time data were then used to construct deceleration vs penetration curves at velocities from 15 to 46 m/s.

RESULTS

Test parameters for the projectile impacts into snow are listed in Table 1. Acceleration vs penetration graphs are shown in Figure A1, and the measured values are given in Appendix B. All of the graphs show a nearly linear relationship between the deceleration and the penetration, with larger deceleration values at a given penetration for higher initial impact velocities. The variation between the individual tests shown in the graphs can be used to estimate the accuracy of the deceleration measurements at about ± 50 m/s^2 (or ± 5 g's). The slight variations in the initial conditions did not show a consistent relationship with the measured deceleration values.

At an initial velocity of 61 m/s (200 ft/s), the shape of the curve (Fig. A1e) becomes much different from the curves for lower velocity tests. The signal processing techniques used to reduce the data were no longer able to remove the effects of the projectile resonating as it hit the snow target. The bandwidth of the recording system would have to be increased to allow higher velocity data to be analyzed.

Table 1. Impacts into snow.

Test no.	Impact velocity (m/s)	Impact velocity (ft/s)	Density (kg/m^3)	Notes	Filter frequency (Hz)
79-09	15	49	380	-	500
79-10	16	51	390	-	500
79-12	16	51	410	-	500
79-15	23	75	410	-	700
79-16	23	74	420	-	700
79-17	24	79	430	-	700
79-06	30	99	410	-	750
79-08	30	99	390	-	750
79-18	30	99	440	-	750
79-21	45	149	430	-	1000
79-24	45	149	410	-	1000
79-22	61	200	410	-	1000
79-25	61	199	420	-	1000
79-26	61	201	400	A	1000
79-23	76	250	420	-	1000
79-27	90	294	400	-	1000
79-28	92	301	420	-	1000

A. Target tipped.

A graph of the averages of the individual tests is shown in Figure 9. The deceleration values for a penetration of 0.08 m or greater (after the resonating caused by the impact with the snow surface has died down) show a monotonic increase with respect to the initial impact velocity. Note, however, that the deceleration curve for an initial velocity of 23 m/s (75 ft/s) is not significantly different from the curve for 31 m/s (100 ft/s) within the estimated accuracy of the measurements. Thus this experiment can only resolve differences greater than about 15 m/s (50 ft/s) between the initial impact velocities.

The parameters for the impacts into nylon are listed in Table 2, and graphs of acceleration vs distance are given in Figure A2. The projectile experienced a nearly constant deceleration after impact. In addition, there was no measurable difference in deceleration after impacts at 15 and 30 m/s (50 and 100 ft/s). Again, the records of the higher impact velocity tests are not reliable because of the bandwidth limitations. Although both wet and dry nylon shavings were used, no significant differences between the two conditions were found.

Table 3 lists the test parameters for impacts of the projectile into Styrofoam. Graphs of acceleration vs distance are shown in Figure A3. The values of deceleration increased monotonically as a function of

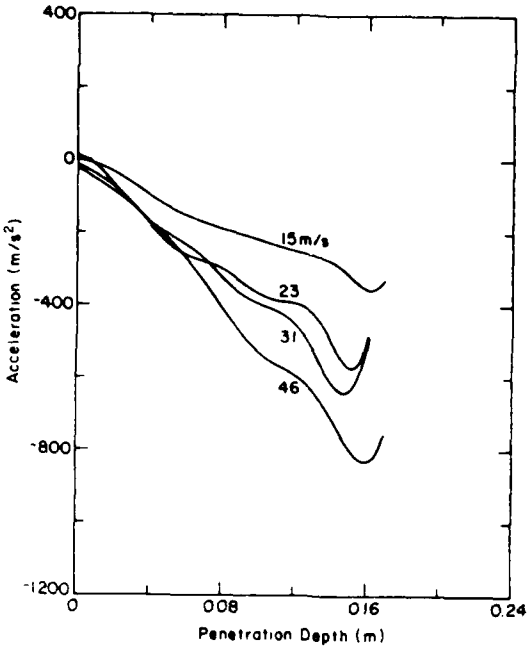

Figure 9. Acceleration vs penetration depth into snow. Average value for impact velocities of 15 through 46 m/s (50 through 150 ft/s). Three separate impacts were averaged to produce these curves, except for the curve of 46 m/s, which is the average of two tests.

Table 2. Impacts into nylon.

Test no.	Impact velocity (m/s)	Impact velocity (ft/s)	Density (kg/m³)	Notes	Filter frequency (Hz)
79-11	15	49	90 wet	-	500
79-13	15	49	140 dry	-	500
79-07	30	100	99 dry	A	750
79-19	30	100	170 wet, frozen	A	750
79-20	30	98	160 wet	B	750
79-29	59	195	180 wet	-	1000
79-30	61	201	90 dry	-	1000
79-31	91	299	90 dry	B	1000
79-32	87	287	150 wet	A	1000

A. Target slumped.
B. Accelerometer damaged during test.

penetration depth. The measurements at 15 and 31 m/s (50 and 100 ft/s) are the only reliable ones for the reasons discussed above. For these tests, as with nylon, there is very little difference between the decelerations caused at these two impact velocities.

Table 3. Impacts into Styrofoam.

Test no.	Impact velocity (m/s)	Impact velocity (ft/s)	Density (kg/m³)	Filter frequency (Hz)
79-14	15	50	32	1000
79-33	28	93	32	1000
79-02	30	100	32	1000
79-03	30	100	32	1000
79-04	59	193	32	1000
79-05	92	301	32	1000

Figure 10 shows a comparison of the average acceleration values measured for all three materials with an initial impact velocity of 31 m/s (100 ft/s). This graph shows striking differences in the decelerations caused by the different materials. Nylon caused much lower values of deceleration when compared with snow, while Styrofoam caused much larger values. In addition, the deceleration caused by nylon leveled off at a constant value after a penetration of a few centimeters, while the decelerations increased with depth for the other two materials. Nylon has been used by the U.S. Air Force to simulate snow for

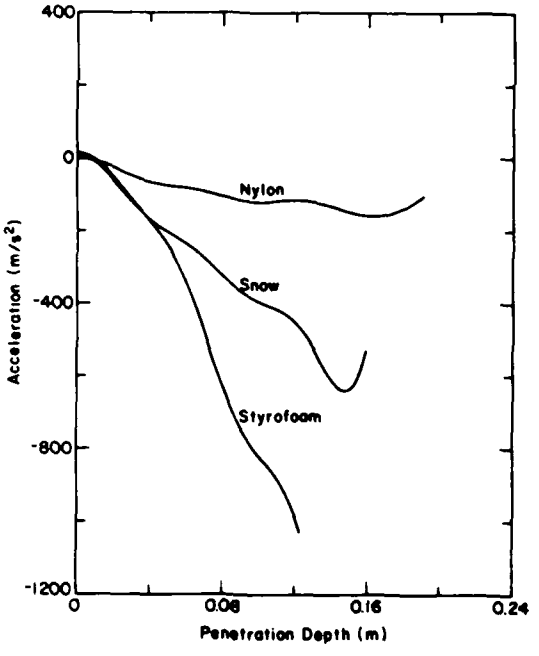

Figure 10. Acceleration vs penetration depth into snow, nylon, and Styrofoam at an impact velocity of 31 m/s (100 ft/s).

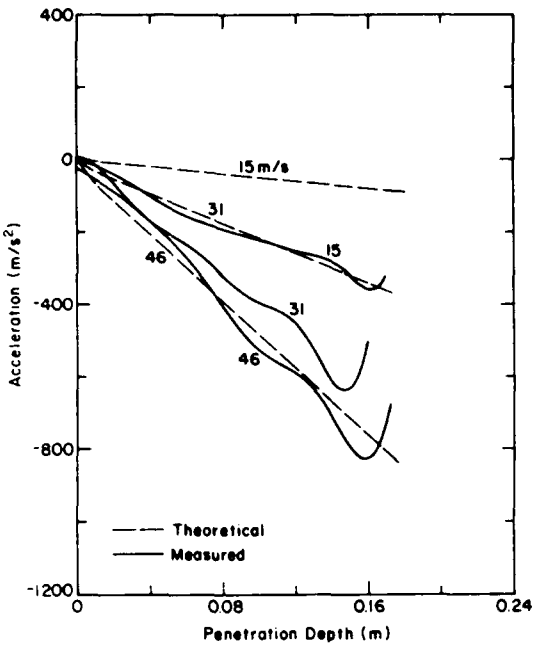

Figure 11. Acceleration vs penetration depth into snow—a comparison of measured and theoretical values.

missile nose cone impacts*. These measurements, however, show that the characteristic shape of the acceleration vs penetration depth curves as well as the magnitude of the values for nylon and snow of this density are markedly different, suggesting that different processes are involved in causing the deceleration.

A hydrodynamic drag force equation has been used by several investigators (Brennan et al. 1980) as a basis for determining fuze performance against water, snow, or mud targets. The equation is

$$F = \frac{1}{2} C_D \rho V_o^2 A, \qquad (2)$$

where F = drag force on projectile
C_D = drag coefficient
ρ = target density
V_o = projectile velocity
A = projectile area.

Kornhauser (1969) claimed that eq 2 produces conservative estimates of fuze performance, i.e. the calculated force is lower than the actual force. However, no test data for snow targets were available to verify this hypothesis. When calculating forces on point detonating devices, the drag coefficient C_D is 1, so eq 2 reduces to the equation for the stagnation pressure for a body traveling in a fluid medium.

Data from impacts into snow are compared with predictions made using eq 2 in Figure 11. For low velocities (15-30 m/s), this equation predicts lower values for deceleration than were measured. At 46 m/s, there is close agreement between the calculated and the measured deceleration values. The experimental data above this velocity are severely degraded by noise but were used to estimate deceleration values. These estimated values are less than values calculated using eq 2.

As shown in Figure 11, the predictions made using eq 2 are not in agreement with the measured data, and the agreement at 46 m/s must be regarded as fortuitous. This comparison shows that treating snow as a simple fluid by eq 2 is invalid and a theory which more accurately models the behavior of snow is needed.

CONCLUSIONS

These experiments have demonstrated the utility of the centrifugal launching method for measuring the deceleration of a projectile caused by impact with a compressible material. The measurements were estimated to have an accuracy of ±50 m/s² for initial impact velocities of 15-46 m/s.

The data show that for a projectile impacting into snow the deceleration increases as the initial impact velocity increases. Projectiles launched into targets prepared from nylon shavings undergo much less deceleration than those launched into snow targets. In addition, the deceleration appears to be independent of penetration depth for nylon targets. Of all of the materials tested, Styrofoam targets caused the largest deceleration of the impacting projectiles. This penetration resistance of the Styrofoam targets is probably caused by the cohesive forces between the individual particles of the material.

Past theoretical work on deceleration of projectiles has treated snow in a very simplified manner. The data from these experiments do not agree with predictions made using these simplified theories (see Fig. 11). In addition, these measurements show that nylon shavings are not suitable as an experimental analog for snow (see Fig. 10).

*Personal communication with H. Rarrick, Sandia Laboratories, 1978.

RECOMMENDATIONS FOR FUTURE WORK

Future tests should be conducted with higher bandwidth instrumentation to provide sufficient data for analysis at higher impact velocities. It is estimated that a recording bandwidth of 40 kHz would be adequate for impact velocities of up to 240 m/s. Deconvolution and other methods of pulse compression could also be used to eliminate the resonant noise from the data once the bandwidth has been increased.

Future testing should also include deeper targets so that a steady-state penetration condition can be achieved. The use of a simple projectile shape (e.g., cylindrical or conical) would also allow the fundamental response of snow to an impact to be evaluated so that differences between different types of projectiles could eventually be accounted for. Snow of different initial densities should also be investigated in future tests.

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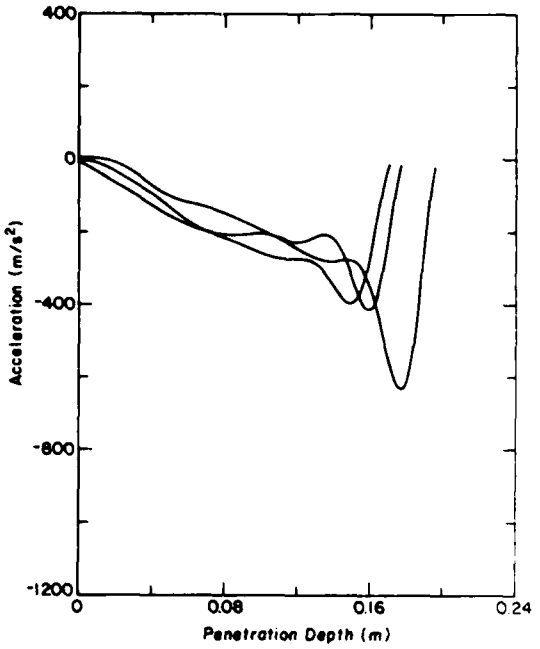
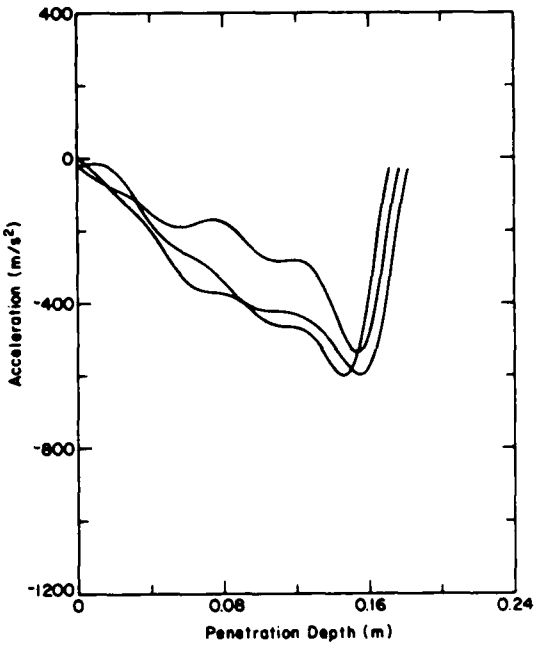
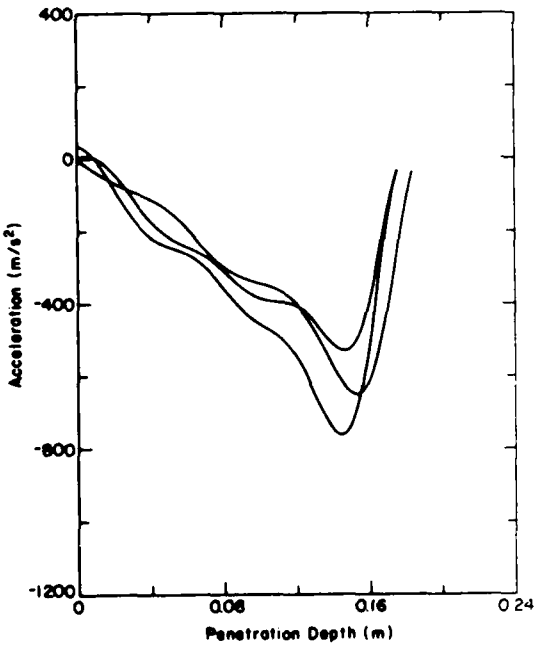
APPENDIX A. GRAPHS OF MEASURED ACCELERATION VS PENETRATION DEPTH.



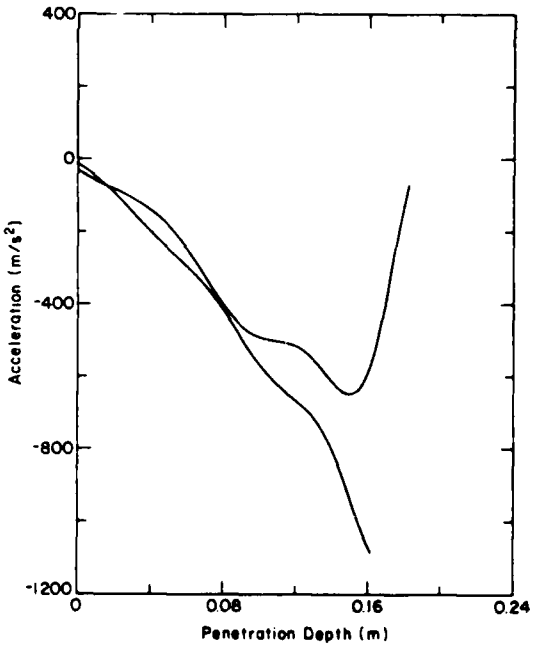
a. Impact velocity 15 m/s (50 ft/s).



b. Impact velocity 23 m/s (75 ft/s).

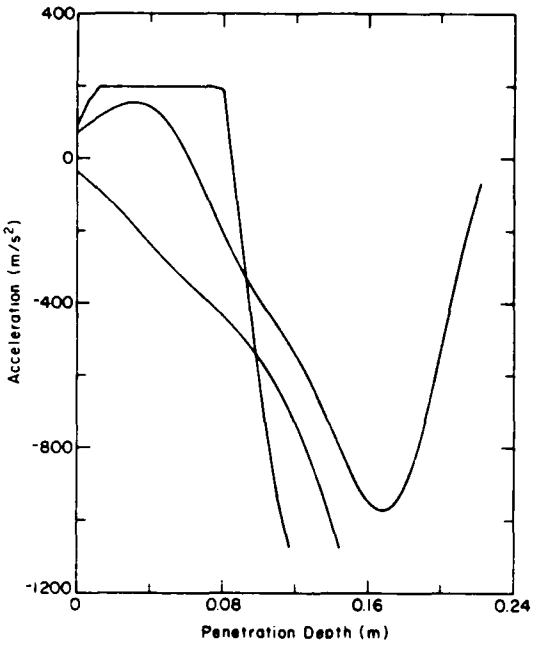


c. Impact velocity 31 m/s (100 ft/s).

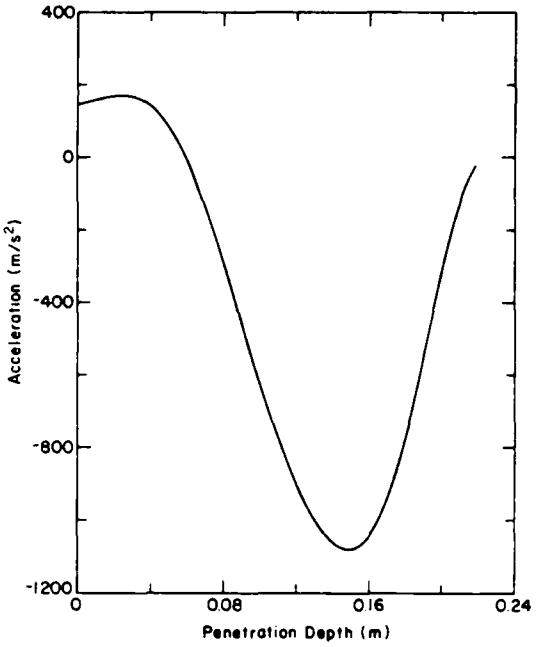


d. Impact velocity 46 m/s (150 ft/s).

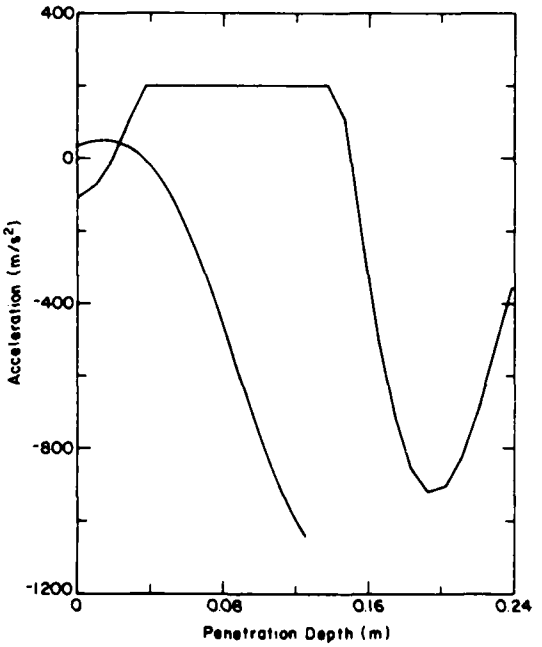
Figure A1. Acceleration vs penetration depth into snow. Each line corresponds to one of the test impacts listed in Table B1.



e. Impact velocity 61 m/s (200 ft/s).

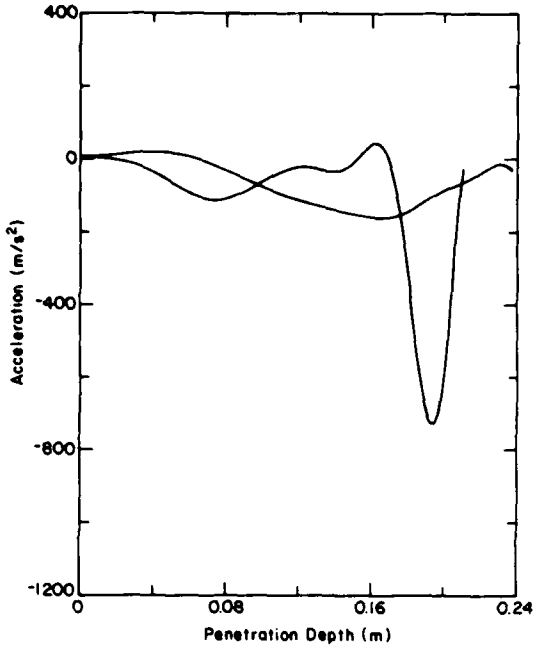


f. Impact velocity 76 m/s (250 ft/s).

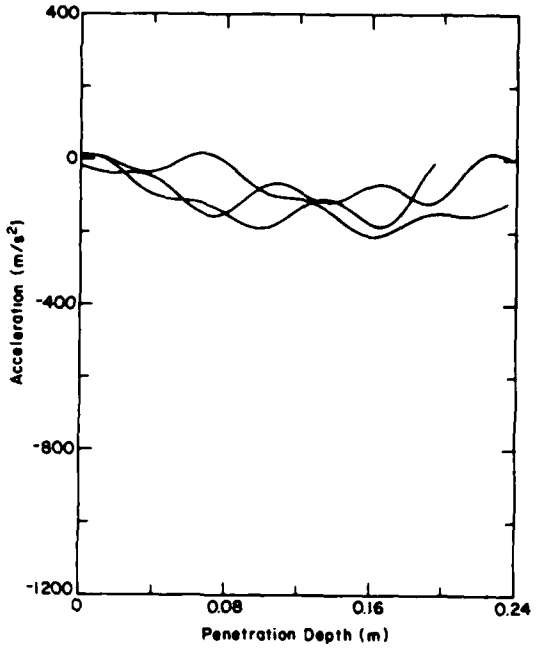


g. Impact velocity 91 m/s (300 ft/s).

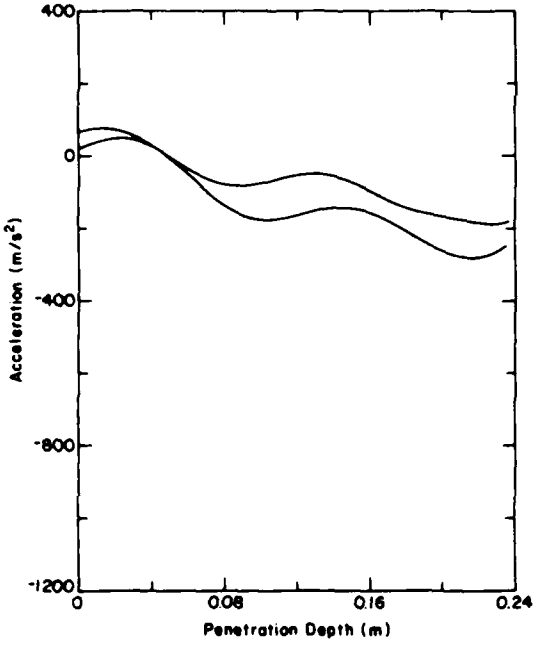
Figure A1 (cont'd). Acceleration vs penetration depth into snow.



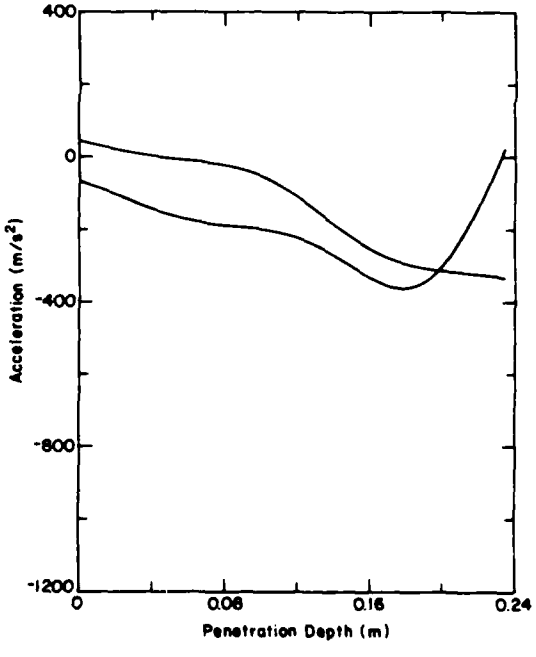
a. Impact velocity 15 m/s (50 ft/s).



b. Impact velocity 31 m/s (100 ft/s).

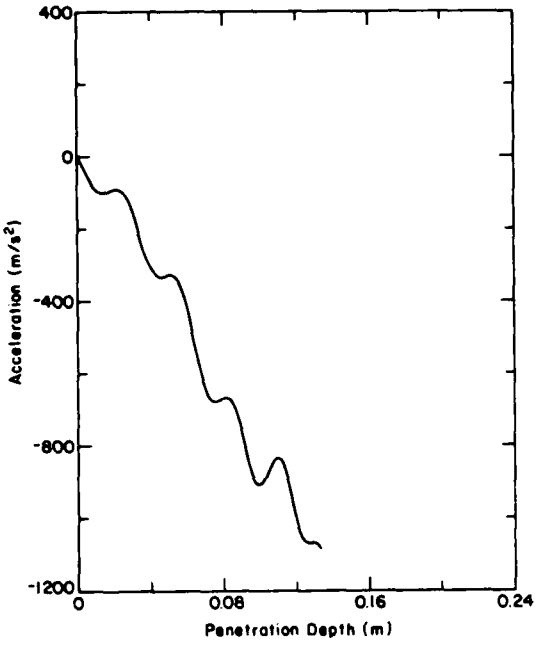


c. Impact velocity 61 m/s (200 ft/s).

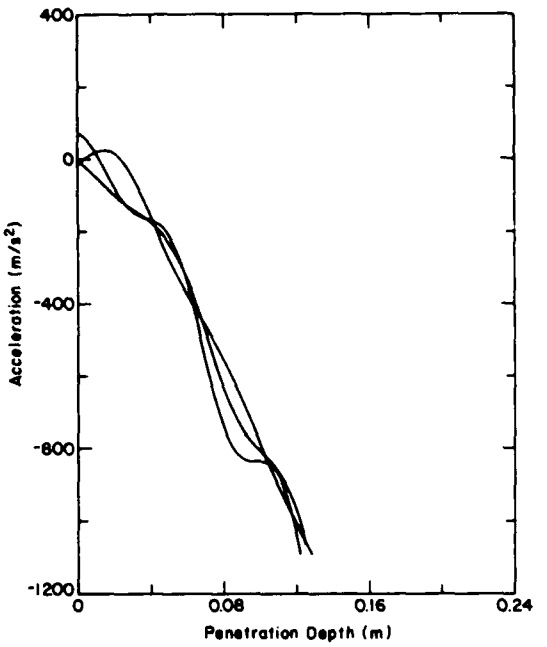


d. Impact velocity 91 m/s (300 ft/s).

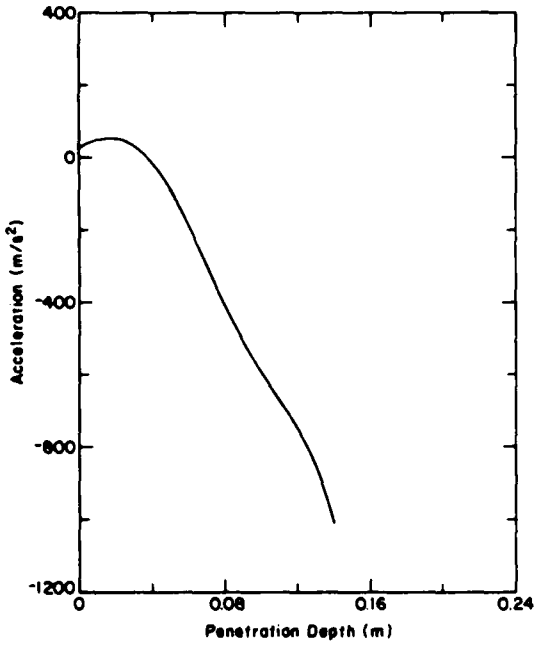
Figure A2. Acceleration vs penetration depth into nylon. Each line corresponds to one of the test impacts listed in Table B1.



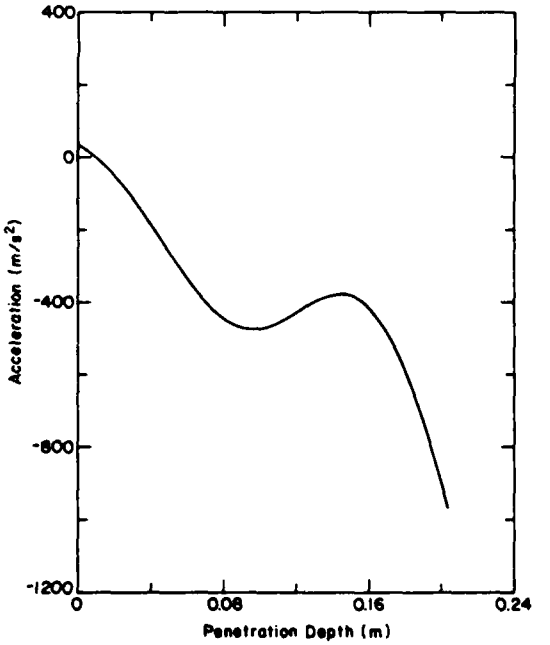
a. Impact velocity 15 m/s (50 ft/s).



b. Impact velocity 31 m/s (100 ft/s).



c. Impact velocity 59 m/s (193 ft/s)



d. Impact velocity 92 m/s (301 ft/s).

Figure A3. Acceleration vs penetration depth into Styrofoam. Each line corresponds to one of the test impacts listed in Table B1.

APPENDIX B. LISTING OF DATA FOR EACH IMPACT

Table B1. Time (TIME), acceleration (ACCEL), velocity (VEL), and penetration depth (DIST) values are listed for each impact. The data are listed in the same order in which the measurements were obtained. For a listing of these impacts by target material and impact velocity see Tables 1, 2, and 3.

TEST NO. 79-01
MATERIAL: STYROFOAM
DENSITY: 0.032 G/CC
IMPACT VELOCITY: 100. FT/S 30.5 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 48
LOW PASS FILTER CUTOFF: 1000. HZ
COMMENTS: BAD DATA

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	-0.1500053E 02	0.3048000E 02	0.0000000E 00
0.4000000E 00	0.5195510E 02	0.3046829E 02	0.1219186E-01
0.8000000E 00	0.2702223E 03	0.3054416E 02	0.2439446E-01
0.1200000E 01	0.3881366E 03	0.3068586E 02	0.3663886E-01
0.1600000E 01	0.1187333E 03	0.3079788E 02	0.4893906E-01
0.2000000E 01	-0.1975936E 03	0.3077396E 02	0.6125736E-01
0.2400000E 01	-0.1433406E 03	0.3069446E 02	0.7355026E-01
0.2800000E 01	0.4465186E 02	0.3067776E 02	0.8582226E-01
0.3200000E 01	0.5102756E 02	0.3070286E 02	0.9809826E-01

TEST NO. 79-02
MATERIAL: STYROFOAM
DENSITY: 0.032 G/CC
IMPACT VELOCITY: 100. FT/S 30.5 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 80
LOW PASS FILTER CUTOFF: 1000. HZ
COMMENTS:

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	-0.9383776E 01	0.3048000E 02	0.0000000E 00
0.4000000E 00	0.2584716E 02	0.3048446E 02	0.1219246E-01
0.8000000E 00	-0.1053064E 02	0.3049056E 02	0.2438678E-01
0.1200000E 01	-0.1296076E 03	0.3046436E 02	0.3658036E-01
0.1600000E 01	-0.2715646E 03	0.3038376E 02	0.4875516E-01
0.2000000E 01	-0.3887946E 03	0.3025076E 02	0.6088006E-01
0.2400000E 01	-0.4894436E 03	0.3007516E 02	0.7294636E-01
0.2800000E 01	-0.5068946E 03	0.2985676E 02	0.8493416E-01
0.3200000E 01	-0.4748546E 03	0.2958606E 02	0.9682446E-01
0.3600000E 01	-0.3879226E 03	0.2925826E 02	0.1085956E 00
0.4000000E 01	-0.1311946E 03	0.2887796E 02	0.1202246E 00
0.4400000E 01	-0.1126086E 04	0.2845006E 02	0.1316916E 00
0.4800000E 01	-0.1241246E 04	0.2797756E 02	0.1429776E 00
0.5200000E 01	-0.1479106E 04	0.2744046E 02	0.1540646E 00
0.5600000E 01	-0.1907106E 04	0.2676466E 02	0.1649106E 00
0.6000000E 01	-0.1912676E 04	0.2597116E 02	0.1754566E 00
0.6400000E 01	-0.1823596E 04	0.2539516E 02	0.1857176E 00

TEST NO. 79-03
MATERIAL: STYROFOAM
DENSITY: 0.032 G/CC
IMPACT VELOCITY: 100. FT/S 30.5 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 84
LOW PASS FILTER CUTOFF: 1000. HZ
COMMENTS:

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	-0.5207586E 01	0.3048000E 02	0.0000000E 00
0.4000000E 00	-0.6562446E 02	0.3046636E 02	0.1219006E-01
0.8000000E 00	-0.1215586E 03	0.3042836E 02	0.2436966E-01
0.1200000E 01	-0.1641006E 03	0.3037116E 02	0.3653006E-01
0.1600000E 01	-0.2295406E 03	0.3029386E 02	0.4866386E-01
0.2000000E 01	-0.3521536E 03	0.3017956E 02	0.6076006E-01
0.2400000E 01	-0.5269196E 03	0.3000466E 02	0.7279896E-01
0.2800000E 01	-0.6945506E 03	0.2975686E 02	0.8475376E-01
0.3200000E 01	-0.7938726E 03	0.2945086E 02	0.9659856E-01
0.3600000E 01	-0.8535306E 03	0.2911966E 02	0.1083176E 00
0.4000000E 01	-0.9726516E 03	0.2876756E 02	0.1198986E 00
0.4400000E 01	-0.1184206E 04	0.2833816E 02	0.1313216E 00
0.4800000E 01	-0.1385596E 04	0.2782166E 02	0.1425566E 00
0.5200000E 01	-0.1516426E 04	0.2724066E 02	0.1535706E 00
0.5600000E 01	-0.1811056E 04	0.2658406E 02	0.1643396E 00
0.6000000E 01	-0.2413056E 04	0.2574416E 02	0.1748126E 00
0.6400000E 01	-0.2946306E 04	0.2472946E 02	0.1849096E 00
0.6800000E 01	-0.3061436E 04	0.2399656E 02	0.1946336E 00

Table B1 (cont'd).

TEST NO. 79-04
MATERIAL: STYROFOAM
DENSITY: 0.032 G/CC
IMPACT VELOCITY: 193. FT/S 58.8 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 57
LOW PASS FILTER CUTOFF: 1000. HZ
COMMENTS: ROUND HIT STEEL.

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	0.293649E 02	0.588264E 02	0.000000E 00
0.4000000E 00	0.497614E 02	0.588454E 02	0.235341E-01
0.8000000E 00	-0.672709E 02	0.588468E 02	0.470739E-01
0.1200000E 01	-0.305018E 03	0.587745E 02	0.706011E-01
0.1600000E 01	-0.545259E 03	0.586026E 02	0.940795E-01
0.2000000E 01	-0.725919E 03	0.583476E 02	0.117472E 00
0.2400000E 01	-0.101551E 04	0.580074E 02	0.140746E 00
0.2800000E 01	-0.161003E 04	0.574901E 02	0.163853E 00
0.3200000E 01	-0.206823E 04	0.567357E 02	0.186704E 00
0.3600000E 01	-0.161493E 04	0.559667E 02	0.209239E 00
0.4000000E 01	-0.574350E 03	0.555283E 02	0.231524E 00
0.4400000E 01	-0.147064E 02	0.554368E 02	0.253710E 00

TEST NO. 79-05
MATERIAL: STYROFOAM
DENSITY: 0.032 G/CC
IMPACT VELOCITY: 301. FT/S 91.7 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 56
LOW PASS FILTER CUTOFF: 1000. HZ
COMMENTS: BAD DATA

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	0.322985E 02	0.917446E 02	0.000000E 00
0.4000000E 00	-0.165388E 03	0.917238E 02	0.366962E-01
0.8000000E 00	-0.422166E 03	0.916033E 02	0.733648E-01
0.1200000E 01	-0.460609E 03	0.914179E 02	0.1099698E 00
0.1600000E 01	-0.352852E 03	0.912527E 02	0.146502E 00
0.2000000E 01	-0.649923E 03	0.910622E 02	0.182969E 00
0.2400000E 01	-0.134865E 04	0.906707E 02	0.219324E 00
0.2800000E 01	-0.198920E 04	0.899554E 02	0.255464E 00
0.3200000E 01	-0.191821E 04	0.891793E 02	0.291297E 00
0.3600000E 01	-0.104397E 04	0.885713E 02	0.326836E 00
0.4000000E 01	-0.213848E 03	0.883369E 02	0.362207E 00

TEST NO. 79-06
MATERIAL: SNOW
DENSITY: 0.410 G/CC
IMPACT VELOCITY: 99. FT/S 30.2 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 77
LOW PASS FILTER CUTOFF: 750. HZ
COMMENTS:

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	-0.314947E 01	0.301752E 02	0.000000E 00
0.4000000E 00	-0.418837E 02	0.301663E 02	0.120688E-01
0.8000000E 00	-0.767501E 02	0.301423E 02	0.241309E-01
0.1200000E 01	-0.103508E 03	0.301061E 02	0.361809E-01
0.1600000E 01	-0.138755E 03	0.300583E 02	0.482142E-01
0.2000000E 01	-0.195856E 03	0.299920E 02	0.602249E-01
0.2400000E 01	-0.262601E 03	0.299002E 02	0.722042E-01
0.2800000E 01	-0.313091E 03	0.297842E 02	0.841416E-01
0.3200000E 01	-0.338247E 03	0.296533E 02	0.960294E-01
0.3600000E 01	-0.356685E 03	0.295146E 02	0.107863E 00
0.4000000E 01	-0.398547E 03	0.293647E 02	0.119639E 00
0.4400000E 01	-0.483835E 03	0.291946E 02	0.131351E 00
0.4800000E 01	-0.596966E 03	0.289734E 02	0.142985E 00
0.5200000E 01	-0.655807E 03	0.287192E 02	0.154524E 00
0.5600000E 01	-0.540614E 03	0.284751E 02	0.165961E 00
0.6000000E 01	-0.242654E 03	0.283129E 02	0.177315E 00
0.6400000E 01	-0.797360E 01	0.282711E 02	0.188629E 00

TEST NO. 79-07
MATERIAL: DRY NYLON
DENSITY: 0.099 G/CC
IMPACT VELOCITY: 100. FT/S 30.5 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 93
LOW PASS FILTER CUTOFF: 750. HZ
COMMENTS: TARGET SLUMPED.

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	-0.157034E 02	0.304400E 02	0.000000E 00
0.4000000E 00	-0.345035E 02	0.304303E 02	0.121701E-01
0.8000000E 00	-0.559554E 02	0.304154E 02	0.243749E-01
0.1200000E 01	-0.436349E 02	0.303938E 02	0.365838E-01
0.1600000E 01	-0.402685E 02	0.303656E 02	0.487854E-01
0.2000000E 01	-0.131596E 02	0.303343E 02	0.609699E-01
0.2400000E 01	-0.155109E 03	0.303145E 02	0.731218E-01
0.2800000E 01	-0.127328E 03	0.302956E 02	0.852355E-01
0.3200000E 01	-0.130116E 02	0.302742E 02	0.972966E-01
0.3600000E 01	-0.456694E 02	0.302467E 02	0.109292E 00
0.4000000E 01	-0.698563E 02	0.302155E 02	0.121377E 00
0.4400000E 01	-0.117711E 03	0.301733E 02	0.133431E 00
0.4800000E 01	-0.113672E 03	0.301066E 02	0.145467E 00
0.5200000E 01	-0.783A.8E 02	0.300257E 02	0.157455E 00
0.5600000E 01	-0.701[illegible]E 02	0.299636E 02	0.169451E 00
0.6000000E 01	-0.100[illegible]0E 03	0.298946E 02	0.181485E 00
0.6400000E 01	-0.122[illegible]2E 03	0.298212E 02	0.193463E 00
0.6800000E 01	-0.427[illegible]1E 02	0.297775E 02	0.205492E 00
0.7200000E 01	-0.125[illegible]8E 02	0.297592E 02	0.217488E 00
0.7600000E 01	0.140[illegible]0E 02	0.297616E 02	0.229512E 00
0.8000000E 01	-0.736[illegible]9E 00	0.297864E 02	0.241525E 00

Table B1 (cont'd).

TEST NO. 79-08
MATERIAL: SNO.
DENSITY: 0.890 G/CC
IMPACT VELOCITY: 99. FT/S 30.2 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 74
LOW PASS FILTER CUTOFF: 750. HZ
COMMENTS:

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	-0.1435578E 01	0.3017528E 02	0.0000000E 00
0.4000000E-01	-0.1564628E 01	0.3017688E 02	0.1207705E-01
0.8000000E-01	-0.6945478E 02	0.3016328E 02	0.2413938E-01
0.1200000E 01	-0.1552735E 03	0.3011885E 02	0.3619666E-01
0.1600000E 01	-0.2213234E 03	0.3004418E 02	0.4822998E-01
0.2000000E 01	-0.2446588E 03	0.2995208E 02	0.6022948E-01
0.2400000E 01	-0.2779866E 03	0.2984508E 02	0.7218988E-01
0.2800000E 01	-0.3297022E 03	0.2972488E 02	0.8410548E-01
0.3200000E 01	-0.3775586E 03	0.2958478E 02	0.9596828E-01
0.3600000E 01	-0.3962885E 03	0.2942908E 02	0.1077718E 00
0.4000000E 01	-0.4063559E 03	0.2926908E 02	0.1195115E 00
0.4400000E 01	-0.4545933E 03	0.2910958E 02	0.1311858E 00
0.4800000E 01	-0.5249456E 03	0.2896168E 02	0.1427868E 00
0.5200000E 01	-0.5879414E 03	0.2886918E 02	0.1543048E 00
0.5600000E 01	-0.6266138E 03	0.2885278E 02	0.1657458E 00
0.6000000E 01	-0.6417478E 02	0.2884698E 02	0.1771428E 00

TEST NO. 79-09
MATERIAL: SNO.
DENSITY: 0.880 G/CC
IMPACT VELOCITY: 49. FT/S 14.9 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 141
LOW PASS FILTER CUTOFF: 500. HZ
COMMENTS:

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	-0.1184145E 01	0.1493528E 02	0.0000000E 00
0.4000000E-01	-0.4381268E 01	0.1493428E 02	0.5973928E-02
0.8000000E-01	-0.1368443E 02	0.1493088E 02	0.1194708E-01
0.1200000E 01	-0.2886511E 02	0.1492258E 02	0.1791798E-01
0.1600000E 01	-0.4650758E 02	0.1490758E 02	0.2388418E-01
0.2000000E 01	-0.6469428E 02	0.1488528E 02	0.2984298E-01
0.2400000E 01	-0.8272638E 02	0.1485588E 02	0.3579138E-01
0.2800000E 01	-0.1018888E 03	0.1481898E 02	0.4172648E-01
0.3200000E 01	-0.1233658E 03	0.1477398E 02	0.4764528E-01
0.3600000E 01	-0.1462458E 03	0.1471998E 02	0.5354428E-01
0.4000000E 01	-0.1677448E 03	0.1465708E 02	0.5941988E-01
0.4400000E 01	-0.1854128E 03	0.1458628E 02	0.6526878E-01
0.4800000E 01	-0.1951168E 03	0.1450938E 02	0.7109758E-01
0.5200000E 01	-0.2005978E 03	0.1442838E 02	0.7690758E-01
0.5600000E 01	-0.2039768E 03	0.1434528E 02	0.8269028E-01
0.6000000E 01	-0.2068138E 03	0.1426178E 02	0.8845158E-01
0.6400000E 01	-0.2053578E 03	0.1417908E 02	0.9419658E-01
0.6800000E 01	-0.2045468E 03	0.1409718E 02	0.9992948E-01
0.7200000E 01	-0.2088038E 03	0.1401468E 02	0.1056318E 00
0.7600000E 01	-0.2176168E 03	0.1392848E 02	0.1113068E 00
0.8000000E 01	-0.2264138E 03	0.1384058E 02	0.1169068E 00
0.8400000E 01	-0.2290258E 03	0.1374918E 02	0.1224378E 00
0.8800000E 01	-0.2224448E 03	0.1365868E 02	0.1279458E 00
0.9200000E 01	-0.2118708E 03	0.1355718E 02	0.1332958E 00
0.9600000E 01	-0.2111458E 03	0.1344778E 02	0.1385718E 00
0.1000000E 02	-0.2058858E 03	0.1334618E 02	0.1436958E 00
0.1040000E 02	-0.2054758E 03	0.1325368E 02	0.1490348E 00
0.1080000E 02	-0.2069238E 03	0.1315658E 02	0.1543258E 00
0.1120000E 02	-0.2076708E 03	0.1306198E 02	0.1595598E 00
0.1160000E 02	-0.2072508E 03	0.1296398E 02	0.1647268E 00
0.1200000E 02	-0.2068358E 03	0.1286548E 02	0.1698338E 00
0.1240000E 02	-0.1049038E 03	0.1276048E 02	0.1748988E 00
0.1280000E 02	-0.3163498E 01	0.1261278E 02	0.1799458E 00

Table B1 (cont'd).

TEST NO. 79-10
MATERIAL: SNOW
DENSITY: 0.390 G/CC
IMPACT VELOCITY: 51. FT/S 15.5 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 132
LOW PASS FILTER CUTOFF: 500. HZ
COMMENTS:

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	-0.567382E 01	0.155448E 02	0.0000000E 00
0.4000000E 00	-0.223086E 02	0.155394E 02	0.6217037E-02
0.8000000E 00	-0.420045E 02	0.155265E 02	0.1243304E-01
0.1200000E 01	-0.616848E 02	0.155058E 02	0.1863711E-01
0.1600000E 01	-0.803597E 02	0.154773E 02	0.2483405E-01
0.2000000E 01	-0.988826E 02	0.154415E 02	0.3101179E-01
0.2400000E 01	-0.1180 5E 03	0.153981E 02	0.3718615E-01
0.2800000E 01	-0.1374 2E 03	0.153470E 02	0.4335355E-01
0.3200000E 01	-0.1551 6E 03	0.152864E 02	0.4946265E-01
0.3600000E 01	-0.1702 9E 03	0.152232E 02	0.5556515E-01
0.4000000E 01	-0.1826 3E 03	0.151526E 02	0.6164035E-01
0.4400000E 01	-0.1936 7E 03	0.150773E 02	0.6768645E-01
0.4800000E 01	-0.2039 1E 03	0.149977E 02	0.7370155E-01
0.5200000E 01	-0.2143 6E 03	0.149141E 02	0.7968405E-01
0.5600000E 01	-0.2254 5E 03	0.148261E 02	0.8563215E-01
0.6000000E 01	-0.2378 6E 03	0.147335E 02	0.9154425E-01
0.6400000E 01	-0.2508 3E 03	0.146357E 02	0.9741825E-01
0.6800000E 01	-0.2627 2E 03	0.145329E 02	0.1032525E 00
0.7200000E 01	-0.2708 7E 03	0.144261E 02	0.1090445E 00
0.7600000E 01	-0.2739 1E 03	0.143170E 02	0.1147925E 00
0.8000000E 01	-0.2742 7E 03	0.142073E 02	0.1204975E 00
0.8400000E 01	-0.2779 1E 03	0.140971E 02	0.1261585E 00
0.8800000E 01	-0.2927 0E 03	0.139834E 02	0.1317745E 00
0.9200000E 01	-0.3231 5E 03	0.138607E 02	0.1373435E 00
0.9600000E 01	-0.3637 8E 03	0.137234E 02	0.1428615E 00
0.1000000E 02	-0.3947 2E 03	0.135710E 02	0.1483205E 00
0.1040000E 02	-0.3860 8E 03	0.134131E 02	0.1537175E 00
0.1080000E 02	-0.3147 8E 03	0.132708E 02	0.1590525E 00
0.1120000E 02	-0.1874 8E 03	0.131692E 02	0.1643395E 00
0.1160000E 02	-0.5427 5E 02	0.131219E 02	0.1695955E 00

TEST NO. 79-11
MATERIAL: DRY NYLON
DENSITY: 0.390 G/CC
IMPACT VELOCITY: 48. FT/S 14.6 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 168
LOW PASS FILTER CUTOFF: 500. HZ
COMMENTS:

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	0.971551E 01	0.149352E 02	0.0000000E 00
0.4000000E 00	0.694141E 01	0.149366E 02	0.5974795E-02
0.8000000E 00	0.258662E 01	0.149405E 02	0.1195076E-01
0.1200000E 01	-0.217173E 01	0.149466E 02	0.1792695E-01
0.1600000E 01	-0.762 1E 01	0.149387E 02	0.2390285E-01
0.2000000E 01	-0.1549 9E 02	0.149342E 02	0.2987755E-01
0.2400000E 01	-0.2733 6E 02	0.149257E 02	0.3584965E-01
0.2800000E 01	-0.4303 9E 02	0.149117E 02	0.4181735E-01
0.3200000E 01	-0.6077 8E 02	0.148910E 02	0.4777805E-01
0.3600000E 01	-0.7821 3E 02	0.148632E 02	0.5372905E-01
0.4000000E 01	-0.9346 7E 02	0.148287E 02	0.5966765E-01
0.4400000E 01	-0.1049 0E 03	0.147889E 02	0.6559125E-01
0.4800000E 01	-0.1111 0E 03	0.147455E 02	0.7149825E-01
0.5200000E 01	-0.1106 6E 03	0.147009E 02	0.7738795E-01
0.5600000E 01	-0.1032 0E 03	0.146579E 02	0.8325915E-01
0.6000000E 01	-0.9068 8E 02	0.146190E 02	0.8911145E-01
0.6400000E 01	-0.7527 8E 02	0.145857E 02	0.9495505E-01
0.6800000E 01	-0.5922 0E 02	0.145588E 02	0.1007845E 00
0.7200000E 01	-0.4413 8E 02	0.145382E 02	0.1066035E 00
0.7600000E 01	-0.3166 1E 02	0.145232E 02	0.1124155E 00
0.8000000E 01	-0.2391 7E 02	0.145122E 02	0.1182225E 00
0.8400000E 01	-0.2255 6E 02	0.145051E 02	0.1240255E 00
0.8800000E 01	-0.2686 3E 02	0.144994E 02	0.1298245E 00
0.9200000E 01	-0.3293 1E 02	0.144814E 02	0.1356195E 00
0.9600000E 01	-0.3404 7E 02	0.144677E 02	0.1414095E 00
0.1000000E 02	-0.2336 0E 02	0.144558E 02	0.1471935E 00
0.1040000E 02	0.1372 9E 01	0.144510E 02	0.1529745E 00
0.1080000E 02	0.3141 7E 02	0.144577E 02	0.1587565E 00
0.1120000E 02	0.4181 4E 02	0.144755E 02	0.1645425E 00
0.1160000E 02	-0.4952 8E 02	0.144832E 02	0.1703335E 00
0.1200000E 02	-0.1398 0E 03	0.144572E 02	0.1761235E 00
0.1240000E 02	-0.2564 2E 03	0.143554E 02	0.1818885E 00
0.1280000E 02	-0.3896 7E 03	0.141696E 02	0.1875985E 00
0.1320000E 02	-0.7296 0E 03	0.139010E 02	0.1932145E 00
0.1360000E 02	-0.6802 4E 03	0.136122E 02	0.1987165E 00
0.1400000E 02	-0.4386 5E 03	0.133934E 02	0.2041125E 00
0.1440000E 02	-0.1330 5E 03	0.132704E 02	0.2094395E 00

Table B1 (cont'd).

TEST NO. 79-12
MATERIAL: SNOW
DENSITY: 0.410 G/CC
IMPACT VELOCITY: 51. FT/S 15.5 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 149
LOW PASS FILTER CUTOFF: 500. HZ
COMMENTS:

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	0.8765 91E 01	0.155448E 02	0.0000000E 00
0.4000000E 00	0.6749 83E 01	0.155480E 02	0.6218 57E-02
0.8000000E 00	0.1938 50E 01	0.155498E 02	0.1243 82E-01
0.1200000E 01	-0.6851 58E 01	0.155499E 02	0.1865 80E-01
0.1600000E 01	-0.2106 29E 02	0.155436E 02	0.2487 67E-01
0.2000000E 01	-0.4076 92E 02	0.155313E 02	0.3109 19E-01
0.2400000E 01	-0.6343 18E 02	0.155105E 02	0.3730 06E-01
0.2800000E 01	-0.8466 89E 02	0.154808E 02	0.4349 91E-01
0.3200000E 01	-0.1009 63E 03	0.154435E 02	0.4968 41E-01
0.3600000E 01	-0.1117 40E 03	0.154008E 02	0.5585 31E-01
0.4000000E 01	-0.1194 32E 03	0.153545E 02	0.6200 42E-01
0.4400000E 01	-0.1271 80E 03	0.153052E 02	0.6813 62E-01
0.4800000E 01	-0.1367 67E 03	0.152525E 02	0.7424 78E-01
0.5200000E 01	-0.1483 16E 03	0.151955E 02	0.8033 76E-01
0.5600000E 01	-0.1613 25E 03	0.151336E 02	0.8640 35E-01
0.6000000E 01	-0.1754 21E 03	0.150663E 02	0.9244 36E-01
0.6400000E 01	-0.1902 02E 03	0.149932E 02	0.9845 57E-01
0.6800000E 01	-0.2050 31E 03	0.149141E 02	0.1044 37E 00
0.7200000E 01	-0.2195 74E 03	0.148292E 02	0.1103 86E 00
0.7600000E 01	-0.2343 45E 03	0.147384E 02	0.1163 00E 00
0.8000000E 01	-0.2502 48E 03	0.146415E 02	0.1221 76E 00
0.8400000E 01	-0.2661 82E 03	0.145382E 02	0.1280 12E 00
0.8800000E 01	-0.2788 29E 03	0.144292E 02	0.1338 06E 00
0.9200000E 01	-0.2820 74E 03	0.143168E 02	0.1395 55E 00
0.9600000E 01	-0.2788 79E 03	0.142045E 02	0.1452 59E 00
0.1000000E 02	-0.2796 55E 03	0.140932E 02	0.1509 18E 00
0.1040000E 02	-0.3043 50E 03	0.139775E 02	0.1565 33E 00
0.1080000E 02	-0.3515 27E 03	0.138439E 02	0.1620 98E 00
0.1120000E 02	-0.4758 53E 03	0.136755E 02	0.1676 03E 00
0.1160000E 02	-0.5851 66E 03	0.134626E 02	0.1730 32E 00
0.1200000E 02	-0.6365 90E 03	0.132154E 02	0.1783 68E 00
0.1240000E 02	-0.6572 00E 03	0.129694E 02	0.1836 04E 00
0.1280000E 02	-0.3856 48E 03	0.127744E 02	0.1887 51E 00
0.1320000E 02	-0.1471 82E 03	0.126682E 02	0.1938 36E 00
0.1360000E 02	-0.4397 67E 01	0.126437E 02	0.1988 97E 00
0.1400000E 02	-0.2245 70E 03	0.124868E 02	0.2167 63E 00
0.1440000E 02	-0.2386 15E 03	0.123179E 02	0.2226 92E 00
0.1480000E 02	-0.2522 93E 03	0.121467E 02	0.2285 82E 00
0.1520000E 02	-0.2645 99E 03	0.119737E 02	0.2344 32E 00
0.1560000E 02	-0.2743 74E 03	0.117965E 02	0.2402 40E 00
0.1600000E 02	-0.2856 53E 03	0.116153E 02	0.2460 04E 00
0.1640000E 02	-0.3034 63E 03	0.114362E 02	0.2517 22E 00
0.1680000E 02	-0.3341 40E 03	0.112610E 02	0.2573 92E 00
0.1720000E 02	-0.3743 52E 03	0.110675E 02	0.2630 07E 00
0.1760000E 02	-0.4044 75E 03	0.108110E 02	0.2685 63E 00
0.1800000E 02	-0.3940 16E 03	0.106495E 02	0.2740 55E 00
0.1840000E 02	-0.3198 18E 03	0.105046E 02	0.2794 85E 00
0.1880000E 02	-0.1865 47E 03	0.104015E 02	0.2848 64E 00
0.1920000E 02	-0.5468 78E 02	0.103539E 02	0.2902 15E 00

Table B1 (cont'd).

TEST NO. 79-13
MATERIAL: WET NYLON
DENSITY: 0.140 G/CC
IMPACT VELOCITY: 47. FT/S 14.3 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 207
LOW PASS FILTER CUTOFF: 500. HZ
COMMENTS:

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	0.893549E 01	0.149552E 02	0.000000E 00
0.4000000E 00	0.955569E 01	0.149389E 02	0.597481E-02
0.8000000E 00	0.1040355E 02	0.149429E 02	0.119511E-01
0.1200000E 01	0.1248662E 02	0.149474E 02	0.179291E-01
0.1600000E 01	0.1553355E 02	0.149530E 02	0.239092E-01
0.2000000E 01	0.1829022E 02	0.149598E 02	0.298917E-01
0.2400000E 01	0.1962229E 02	0.149674E 02	0.358771E-01
0.2800000E 01	0.1925755E 02	0.149752E 02	0.418656E-01
0.3200000E 01	0.1732805E 02	0.149826E 02	0.478571E-01
0.3600000E 01	0.1346657E 02	0.149888E 02	0.538514E-01
0.4000000E 01	0.8797486E 01	0.149930E 02	0.598478E-01
0.4400000E 01	-0.5030542E 01	0.149936E 02	0.658453E-01
0.4800000E 01	-0.1508901E 02	0.149902E 02	0.718422E-01
0.5200000E 01	-0.2771502E 02	0.149817E 02	0.778367E-01
0.5600000E 01	-0.4000054E 02	0.149681E 02	0.838268E-01
0.6000000E 01	-0.5228788E 02	0.149496E 02	0.898105E-01
0.6400000E 01	-0.6526674E 02	0.149212E 02	0.957858E-01
0.6800000E 01	-0.7869866E 02	0.148874E 02	0.1017516E 00
0.7200000E 01	-0.9135111E 02	0.148553E 02	0.1077035E 00
0.7600000E 01	-0.1022247E 03	0.148045E 02	0.1136411E 00
0.8000000E 01	-0.1115275E 03	0.147417E 02	0.1195626E 00
0.8400000E 01	-0.1205522E 03	0.147353E 02	0.1254656E 00
0.8800000E 01	-0.1293544E 03	0.146853E 02	0.1313498E 00
0.9200000E 01	-0.1377788E 03	0.146318E 02	0.1372135E 00
0.9600000E 01	-0.1456960E 03	0.145752E 02	0.1430554E 00
0.1000000E 02	-0.1513507E 03	0.145159E 02	0.1488735E 00
0.1040000E 02	-0.1570947E 03	0.144542E 02	0.1546677E 00
0.1080000E 02	-0.1621411E 03	0.143902E 02	0.1604355E 00
0.1120000E 02	-0.1648145E 03	0.143248E 02	0.1661778E 00
0.1160000E 02	-0.1627615E 03	0.142591E 02	0.1718955E 00
0.1200000E 02	-0.1547455E 03	0.141954E 02	0.1775866E 00
0.1240000E 02	-0.1414615E 03	0.141368E 02	0.1832525E 00
0.1280000E 02	-0.1249446E 03	0.140827E 02	0.1888955E 00
0.1320000E 02	-0.1075575E 03	0.140362E 02	0.1945191E 00
0.1360000E 02	-0.9142245E 02	0.139964E 02	0.2001255E 00
0.1400000E 02	-0.7774088E 02	0.139627E 02	0.2057177E 00
0.1440000E 02	-0.6612857E 02	0.139339E 02	0.2112965E 00
0.1480000E 02	-0.5541371E 02	0.139098E 02	0.2168645E 00
0.1520000E 02	-0.4511376E 02	0.138911E 02	0.2224245E 00
0.1560000E 02	-0.3528673E 02	0.138787E 02	0.2279788E 00
0.1600000E 02	-0.2548055E 02	0.138716E 02	0.2335292E 00
0.1640000E 02	-0.1567195E 02	0.138628E 02	0.2390775E 00
0.1680000E 02	-0.5996598E 01	0.138393E 02	0.2446165E 00
0.1720000E 02	-0.1782044E 03	0.137863E 02	0.2501425E 00
0.1760000E 02	-0.2554592E 03	0.136869E 02	0.2556400E 00
0.1800000E 02	-0.3048622E 03	0.135806E 02	0.2611096E 00
0.1840000E 02	-0.3262288E 03	0.134645E 02	0.2665504E 00
0.1880000E 02	-0.3494465E 03	0.133409E 02	0.2719715E 00
0.1920000E 02	-0.3683782E 03	0.133464E 02	0.2772155E 00

Table B1 (cont'd).

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   TEST NO. 79-14
MATERIAL: STYROFOAM
DENSITY:  0.032 G/CC
IMPACT VELOCITY:    50. FT/S                 15.2 M/S
SAMPLING RATE:  10000. HZ        NO. OF DATA POINTS:    229
LOW PASS FILTER CUTOFF:  1000. HZ
COMMENTS: BAD DATA
```

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.000000E 00	-0.140809E 01	0.152400E 02	0.000000E 00
0.400000E 00	-0.553551E 02	0.152267E 02	0.609415E-02
0.800000E 00	-0.103712E 03	0.151919E 02	0.121783E-01
0.120000E 01	-0.224470E 02	0.151579E 02	0.182470E-01
0.160000E 01	-0.771734E 02	0.151161E 02	0.243008E-01
0.200000E 01	-0.165187E 03	0.150657E 02	0.303380E-01
0.240000E 01	-0.266606E 03	0.149791E 02	0.363482E-01
0.280000E 01	-0.327562E 03	0.148602E 02	0.423164E-01
0.320000E 01	-0.331337E 03	0.147283E 02	0.482331E-01
0.360000E 01	-0.342316E 03	0.145941E 02	0.540967E-01
0.400000E 01	-0.427121E 03	0.144409E 02	0.599043E-01
0.440000E 01	-0.565809E 03	0.142426E 02	0.656426E-01
0.480000E 01	-0.565112E 03	0.139974E 02	0.712913E-01
0.520000E 01	-0.676789E 03	0.137203E 02	0.768347E-01
0.560000E 01	-0.669569E 03	0.134941E 02	0.822700E-01
0.600000E 01	-0.722417E 03	0.1317[illegible]E 02	0.875971E-01
0.640000E 01	-0.632319E 03	0.128677E 02	0.928076E-01
0.680000E 01	-0.307551E 03	0.125172E 02	0.978855E-01
0.720000E 01	-0.494457E 03	0.121543E 02	0.102820E 00
0.760000E 01	-0.441[illegible]45E 03	0.1186[illegible]E 02	0.107611E 00
0.800000E 01	-0.[illegible]472[illegible]4E 03	0.114713E 02	0.112267E 00
0.840000E 01	-0.[illegible]26841E 03	0.111179E 02	0.116786E 00
0.880000E 01	-0.1026[illegible]E 04	0.1072[illegible]E 02	0.121155E 00
0.920000E 01	-0.1072[illegible]E 04	0.1030[illegible]E 02	0.125562E 00
0.960000E 01	-0.1071[illegible]2E 04	0.997459E 01	0.129398E 00
0.100000E 02	-0.109044E 04	0.944393E 01	0.133261E 00
0.104000E 02	-0.117539E 04	0.899262E 01	0.136950E 00
0.108000E 02	-0.128611E 04	0.849577E 01	0.140449E 00
0.112000E 02	-0.134179E 04	0.797151E 01	0.143744E 00
0.116000E 02	-0.132491E 04	0.743670E 01	0.146826E 00
0.120000E 02	-0.129[illegible]6E 04	0.691094E 01	0.149695E 00
0.124000E 02	-0.137[illegible]7E 04	0.63[illegible]E 01	0.152356E 00
0.128000E 02	-0.139748E 04	0.[illegible]34[illegible]26E 01	0.154803E 00
0.132000E 02	-0.141449E 04	0.[illegible]2777[illegible]4E 01	0.157028E 00
0.136000E 02	-0.136374E 04	0.471[illegible]E 01	0.159026E 00
0.140000E 02	-0.129463E 04	0.418[illegible]E 01	0.160807E 00
0.144000E 02	-0.128[illegible]00E 04	0.[illegible]57[illegible]E 01	0.162379E 00
0.148000E 02	-0.134843E 04	0.[illegible]144[illegible]E 01	0.163743E 00
0.152000E 02	-0.136[illegible]0E 04	0.[illegible]60[illegible]10E 01	0.164892E 00
0.156000E 02	-0.1293[illegible]1E 04	0.[illegible]06[illegible]7E 01	0.165825E 00
0.160000E 02	-0.1194[illegible]7E 04	0.1[illegible]6[illegible]4[illegible]E 01	0.166551E 00
0.164000E 02	-0.114[illegible]5E 04	0.1104[illegible]E 01	0.167085E 00
0.168000E 02	-0.113975E 04	0.648126E 00	0.167435E 00
0.172000E 02	-0.110416E 04	0.136311E 00	0.167604E 00
0.176000E 02	-0.[illegible]80[illegible]3E 03	-0.226[illegible]E 00	0.167596E 00
0.180000E 02	-0.[illegible]19[illegible]6E 03	-0.[illegible]88[illegible]77E 00	0.167431E 00
0.184000E 02	-0.[illegible]35[illegible]E 03	-0.[illegible]86440E 00	0.167134E 00
0.188000E 02	-0.62[illegible]24[illegible]E 03	-0.114676E 01	0.166727E 00
0.192000E 02	-0.[illegible]0[illegible]415E 03	-0.1393[illegible]1E 01	0.166218E 00
0.196000E 02	-0.[illegible]1[illegible]3[illegible]3E 03	-0.151[illegible]E 01	0.165615E 00
0.200000E 02	-0.[illegible]65[illegible]213E 03	-0.179[illegible]74E 01	0.164931E 00
0.204000E 02	-0.[illegible]744[illegible]E 03	-0.1[illegible]1[illegible]3E 01	0.164187E 00
0.208000E 02	-0.[illegible]06219E 03	-0.[illegible]0081[illegible]E 01	0.163402E 00
0.212000E 02	-0.111[illegible]4E 03	-0.[illegible]74[illegible]1E 01	0.162584E 00
0.216000E 02	-0.41[illegible]7E 01	-0.[illegible]094[illegible]7E 01	0.161749E 00

Table B1 (cont'd).

TEST NO. 79-15
MATERIAL: SNOW
DENSITY: 0.413 G/CC
IMPACT VELOCITY: 75. FT/S 22.9 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 94
LOW PASS FILTER CUTOFF: 700. HZ
COMMENTS:

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	-0.1934066E 02	0.2286000E 02	0.0000000E 00
0.4000000E 00	-0.5481299E 02	0.2254449E 02	0.9141405E-02
0.8000000E 00	-0.7917899E 02	0.2181786E 02	0.1827425E-01
0.1200000E 01	-0.1017655E 03	0.2078189E 02	0.2730448E-01
0.1600000E 01	-0.1340395E 03	0.1937349E 02	0.3644815E-01
0.2000000E 01	-0.1691522E 03	0.1767405E 02	0.4556035E-01
0.2400000E 01	-0.1967062E 03	0.1565020E 02	0.5443575E-01
0.2800000E 01	-0.1793548E 03	0.1352602E 02	0.6366166E-01
0.3200000E 01	-0.1569483E 03	0.1149692E 02	0.7268895E-01
0.3600000E 01	-0.1774852E 03	0.9234135E 01	0.8162911E-01
0.4000000E 01	-0.2171785E 03	0.6923129E 01	0.9057044E-01
0.4400000E 01	-0.2606935E 03	0.4221698E 01	0.9947698E-01
0.4800000E 01	-0.2817305E 03	0.1217975E 01	0.1083425E 00
0.5200000E 01	-0.2811166E 03	-0.1994465E 01	0.1171625E 00
0.5600000E 01	-0.2905105E 03	-0.4192135E 01	0.1255385E 00
0.6000000E 01	-0.3469645E 03	-0.6775565E 01	0.1346665E 00
0.6400000E 01	-0.4512485E 03	-0.9159685E 01	0.1433375E 00
0.6800000E 01	-0.5344785E 03	-0.1134725E 02	0.1519375E 00
0.7200000E 01	-0.4847295E 03	-0.1311875E 02	0.1604545E 00
0.7600000E 01	-0.2647285E 03	-0.1403375E 02	0.1688955E 00
0.8000000E 01	-0.3051465E 02	-0.1397875E 02	0.1772945E 00

TEST NO. 79-16
MATERIAL: SNOW
DENSITY: 0.420 G/CC
IMPACT VELOCITY: 74. FT/S 22.6 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 94
LOW PASS FILTER CUTOFF: 700. HZ
COMMENTS:

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	-0.2134388E 01	0.2255582E 02	0.0000000E 00
0.4000000E 00	-0.4080842E 02	0.2254788E 02	0.9021136E-02
0.8000000E 00	-0.8658077E 02	0.2252222E 02	0.1803357E-01
0.1200000E 01	-0.1280688E 03	0.2247922E 02	0.2703365E-01
0.1600000E 01	-0.1755777E 03	0.2241139E 02	0.3601677E-01
0.2000000E 01	-0.2386818E 03	0.2233865E 02	0.4496825E-01
0.2400000E 01	-0.3057901E 03	0.2222273E 02	0.5388821E-01
0.2800000E 01	-0.3521101E 03	0.2209488E 02	0.6274705E-01
0.3200000E 01	-0.3596435E 03	0.2194979E 02	0.7155625E-01
0.3600000E 01	-0.3741154E 03	0.2180146E 02	0.8030655E-01
0.4000000E 01	-0.3931465E 03	0.2164866E 02	0.8899367E-01
0.4400000E 01	-0.4276627E 03	0.2145475E 02	0.9762638E-01
0.4800000E 01	-0.4567285E 03	0.2130735E 02	0.1061825E 00
0.5200000E 01	-0.4665145E 03	0.2111221E 02	0.1146685E 00
0.5600000E 01	-0.4725085E 03	0.2092475E 02	0.1232805E 00
0.6000000E 01	-0.4507295E 03	0.2074105E 02	0.1314155E 00
0.6400000E 01	-0.4710975E 03	0.2052465E 02	0.1395695E 00
0.6800000E 01	-0.4997175E 03	0.2028785E 02	0.1478325E 00
0.7200000E 01	-0.5002445E 03	0.2006285E 02	0.1559505E 00
0.7600000E 01	-0.4567175E 03	0.1990755E 02	0.1639915E 00
0.8000000E 01	-0.2891525E 02	0.1985475E 02	0.1719415E 00

TEST NO. 79-17
MATERIAL: SNOW
DENSITY: 0.430 G/CC
IMPACT VELOCITY: 79. FT/S 24.1 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 93
LOW PASS FILTER CUTOFF: 700. HZ
COMMENTS:

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	-0.1779[illegible]E 02	0.2407[illegible]E 02	0.0000000E 00
0.4000000E 00	-0.1207[illegible]E 02	0.2407[illegible]E 02	0.9651[illegible]E-02
0.8000000E 00	-0.3395[illegible]E 02	0.2406[illegible]E 02	0.1929[illegible]E-01
0.1200000E 01	-0.4324[illegible]E 02	0.2404[illegible]E 02	0.2894[illegible]E-01
0.1600000E 01	-0.1671[illegible]E 03	0.2398[illegible]E 02	0.3858[illegible]E-01
0.2000000E 01	-0.1255[illegible]E 03	0.2391[illegible]E 02	0.4817[illegible]E-01
0.2400000E 01	-0.2574[illegible]E 03	0.2381[illegible]E 02	0.5771[illegible]E-01
0.2800000E 01	-0.2834[illegible]E 03	0.2371[illegible]E 02	0.6711[illegible]E-01
0.3200000E 01	-0.1239[illegible]E 03	0.2359[illegible]E 02	0.7657[illegible]E-01
0.3600000E 01	-0.2734[illegible]E 03	0.2344[illegible]E 02	0.8598[illegible]E-01
0.4000000E 01	-0.4073[illegible]E 03	0.2325[illegible]E 02	0.9532[illegible]E-01
0.4400000E 01	-0.4217[illegible]E 03	0.2311[illegible]E 02	0.1046[illegible]E 00
0.4800000E 01	-0.4241[illegible]E 03	0.2291[illegible]E 02	0.1139[illegible]E 00
0.5200000E 01	-0.4359[illegible]E 03	0.2277[illegible]E 02	0.1232[illegible]E 00
0.5600000E 01	-0.4567[illegible]E 03	0.2255[illegible]E 02	0.1325[illegible]E 00
0.6000000E 01	-0.4[illegible]E 03	0.2241[illegible]E 02	0.1418[illegible]E 00
0.6400000E 01	-0.5[illegible]E 03	0.2221[illegible]E 02	0.1509[illegible]E 00
0.6800000E 01	-0.5[illegible]E 03	0.2194[illegible]E 02	0.1597[illegible]E 00
0.7200000E 01	-0.4552[illegible]E 03	0.2177[illegible]E 02	0.1675[illegible]E 00
0.7600000E 01	-0.2[illegible]E 03	0.2159[illegible]E 02	0.1761[illegible]E 00
0.8000000E 01	-0.1[illegible]E 02	0.2154[illegible]E 02	0.1844[illegible]E 00

Table B1 (cont'd).

TEST NO. 79-18
MATERIAL: SNOW
DENSITY: 0.440 G/CC
IMPACT VELOCITY: 99. FT/S 30.2 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 74
LOW PASS FILTER CUTOFF: 750. HZ
COMMENTS:

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	0.381404E 02	0.301752E 02	0.0000000E 00
0.4000000E 00	-0.222875E 02	0.301802E 02	0.120718E-01
0.8000000E 00	-0.121506E 03	0.301518E 02	0.241395E-01
0.1200000E 01	-0.203859E 03	0.300855E 02	0.361880E-01
0.1600000E 01	-0.242405E 03	0.299950E 02	0.482045E-01
0.2000000E 01	-0.265647E 03	0.298937E 02	0.601825E-01
0.2400000E 01	-0.313722E 03	0.297789E 02	0.721176E-01
0.2800000E 01	-0.365074E 03	0.296393E 02	0.840021E-01
0.3200000E 01	-0.444859E 03	0.294725E 02	0.958252E-01
0.3600000E 01	-0.482747E 03	0.292867E 02	0.107577E 00
0.4000000E 01	-0.540467E 03	0.290836E 02	0.119252E 00
0.4400000E 01	-0.654427E 03	0.288461E 02	0.130939E 00
0.4800000E 01	-0.760830E 03	0.285606E 02	0.142322E 00
0.5200000E 01	-0.698192E 03	0.282610E 02	0.153686E 00
0.5600000E 01	-0.387827E 03	0.280374E 02	0.164941E 00
0.6000000E 01	-0.452471E 02	0.279564E 02	0.176136E 00

TEST NO. 79-19
MATERIAL: WET FROZEN NYLON
DENSITY: 0.170 G/CC
IMPACT VELOCITY: 100. FT/S 30.5 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 79
LOW PASS FILTER CUTOFF: 750. HZ
COMMENTS: TARGET MAY HAVE SLUMPED.

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	0.152274E 02	0.304800E 02	0.0000000E 00
0.4000000E 00	0.259999E 01	0.304844E 02	0.121931E-01
0.8000000E 00	-0.432410E 02	0.304773E 02	0.243861E-01
0.1200000E 01	-0.895730E 02	0.304502E 02	0.365722E-01
0.1600000E 01	-0.109158E 03	0.304095E 02	0.487443E-01
0.2000000E 01	-0.112826E 03	0.303651E 02	0.608993E-01
0.2400000E 01	-0.130539E 03	0.303172E 02	0.730359E-01
0.2800000E 01	-0.166018E 03	0.302582E 02	0.851514E-01
0.3200000E 01	-0.189648E 03	0.301861E 02	0.972405E-01
0.3600000E 01	-0.175007E 03	0.301119E 02	0.109300E 00
0.4000000E 01	-0.155237E 03	0.300496E 02	0.121332E 00
0.4400000E 01	-0.111237E 03	0.300014E 02	0.133341E 00
0.4800000E 01	-0.128903E 03	0.299547E 02	0.145333E 00
0.5200000E 01	-0.170136E 03	0.298949E 02	0.157303E 00
0.5600000E 01	-0.181958E 03	0.298227E 02	0.169247E 00
0.6000000E 01	-0.123929E 03	0.297592E 02	0.181162E 00
0.6400000E 01	-0.287606E 02	0.297290E 02	0.193059E 00

TEST NO. 79-20
MATERIAL: WET NYLON
DENSITY: 0.160 G/CC
IMPACT VELOCITY: 98. FT/S 29.9 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 138
LOW PASS FILTER CUTOFF: 750. HZ
COMMENTS: ACCELEROMETER DAMAGED.

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	0.816523E 01	0.298704E 02	0.0000000E 00
0.4000000E 00	0.727323E 01	0.298745E 02	0.119490E-01
0.8000000E 00	-0.185655E 02	0.298726E 02	0.238987E-01
0.1200000E 01	-0.354840E 02	0.298609E 02	0.358456E-01
0.1600000E 01	-0.190301E 02	0.298490E 02	0.477873E-01
0.2000000E 01	0.111309E 02	0.298477E 02	0.597262E-01
0.2400000E 01	0.134837E 02	0.298539E 02	0.716665E-01
0.2800000E 01	-0.247448E 02	0.298526E 02	0.836083E-01
0.3200000E 01	-0.739374E 02	0.298326E 02	0.955459E-01
0.3600000E 01	-0.100883E 03	0.297967E 02	0.107472E 00
0.4000000E 01	-0.108355E 03	0.297547E 02	0.119382E 00
0.4400000E 01	-0.125878E 03	0.297085E 02	0.131275E 00
0.4800000E 01	-0.166264E 03	0.296506E 02	0.143147E 00
0.5200000E 01	-0.205302E 03	0.295757E 02	0.154993E 00
0.5600000E 01	-0.210691E 03	0.294912E 02	0.166807E 00
0.6000000E 01	-0.182543E 03	0.294119E 02	0.178587E 00
0.6400000E 01	-0.153500E 03	0.293452E 02	0.190338E 00
0.6800000E 01	-0.148544E 03	0.292856E 02	0.202064E 00
0.7200000E 01	-0.156563E 03	0.292246E 02	0.213766E 00
0.7600000E 01	-0.146015E 03	0.291635E 02	0.225443E 00
0.8000000E 01	-0.120064E 03	0.291102E 02	0.237097E 00
0.8400000E 01	-0.114287E 03	0.290645E 02	0.248732E 00
0.8800000E 01	-0.143896E 03	0.290135E 02	0.260348E 00
0.9200000E 01	-0.155807E 03	0.289516E 02	0.271941E 00
0.9600000E 01	-0.935845E 02	0.288936E 02	0.283511E 00
0.1000000E 02	-0.245935E 02	0.288784E 02	0.295065E 00
0.1040000E 02	-0.129005E 03	0.288556E 02	0.306613E 00
0.1080000E 02	-0.481357E 03	0.287397E 02	0.318137E 00
0.1120000E 02	-0.972353E 03	0.284645E 02	0.329582E 00
0.1160000E 02	-0.940939E 03	0.280872E 02	0.340893E 00
0.1200000E 02	-0.551770E 03	0.277769E 02	0.352061E 00
0.1240000E 02	-0.654861E 02	0.276618E 02	0.363142E 00

Table B1 (cont'd).

TEST NO. 79-21
MATERIAL: SNOW
DENSITY: 0.430 G/CC
IMPACT VELOCITY: 149. FT/S 45.4 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 55
LOW PASS FILTER CUTOFF: 1000. HZ
COMMENTS:

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	-0.305529E 02	0.454152E 02	0.0000000E 00
0.4000000E 00	-0.774267E 02	0.453933E 02	0.1816235E-01
0.8000000E 00	-0.126744E 03	0.453530E 02	0.3631215E-01
0.1200000E 01	-0.212356E 03	0.452868E 02	0.5444115E-01
0.1600000E 01	-0.344443E 03	0.451763E 02	0.7253535E-01
0.2000000E 01	-0.462564E 03	0.450130E 02	0.9057465E-01
0.2400000E 01	-0.503293E 03	0.448176E 02	0.1085415E 00
0.2800000E 01	-0.536959E 03	0.446116E 02	0.1264275E 00
0.3200000E 01	-0.638227E 03	0.443779E 02	0.1442265E 00
0.3600000E 01	-0.572610E 03	0.441237E 02	0.1619265E 00
0.4000000E 01	-0.165121E 03	0.439703E 02	0.1795395E 00

TEST NO. 79-22
MATERIAL: SNOW
DENSITY: 0.410 G/CC
IMPACT VELOCITY: 200. FT/S 61.0 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 51
LOW PASS FILTER CUTOFF: 1000. HZ
COMMENTS:

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	0.759347E 02	0.609600E 02	0.0000000E 00
0.4000000E 00	0.150845E 03	0.610066E 02	0.2439235E-01
0.8000000E 00	0.101811E 03	0.610633E 02	0.4880695E-01
0.1200000E 01	-0.129161E 03	0.610617E 02	0.7323485E-01
0.1600000E 01	-0.368814E 03	0.609594E 02	0.9764195E-01
0.2000000E 01	-0.553839E 03	0.607754E 02	0.1219915E 00
0.2400000E 01	-0.814264E 03	0.605042E 02	0.1462505E 00
0.2800000E 01	-0.979693E 03	0.601358E 02	0.1703805E 00
0.3200000E 01	-0.700633E 03	0.597844E 02	0.1943615E 00
0.3600000E 01	-0.161511E 03	0.596135E 02	0.2182335E 00

TEST NO. 79-23
MATERIAL: SNOW
DENSITY: 0.430 G/CC
IMPACT VELOCITY: 250. FT/S 76.2 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 42
LOW PASS FILTER CUTOFF: 1000. HZ
COMMENTS:

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	0.151524E 03	0.762000E 02	0.0000000E 00
0.4000000E 00	0.172565E 03	0.762669E 02	0.3049305E-01
0.8000000E 00	-0.277049E 02	0.763063E 02	0.6101015E-01
0.1200000E 01	-0.488997E 03	0.762071E 02	0.9151865E-01
0.1600000E 01	-0.922309E 03	0.759195E 02	0.1219495E 00
0.2000000E 01	-0.108244E 04	0.755064E 02	0.1522365E 00
0.2400000E 01	-0.739712E 03	0.751241E 02	0.1823585E 00
0.2800000E 01	-0.994543E 02	0.749608E 02	0.2123675E 00

TEST NO. 79-24
MATERIAL: SNOW
DENSITY: 0.410 G/CC
IMPACT VELOCITY: 149. FT/S 45.4 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 59
LOW PASS FILTER CUTOFF: 1000. HZ
COMMENTS:

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	-0.117074E 02	0.454152E 02	0.0000000E 00
0.4000000E 00	-0.852575E 02	0.453967E 02	0.1816335E-01
0.8000000E 00	-0.181593E 03	0.453436E 02	0.3631255E-01
0.1200000E 01	-0.270734E 03	0.452527E 02	0.5443295E-01
0.1600000E 01	-0.365285E 03	0.451264E 02	0.7250985E-01
0.2000000E 01	-0.497431E 03	0.449547E 02	0.9052765E-01
0.2400000E 01	-0.617670E 03	0.447301E 02	0.1084665E 00
0.2800000E 01	-0.695006E 03	0.444674E 02	0.1263065E 00
0.3200000E 01	-0.852137E 03	0.441627E 02	0.1440345E 00
0.3600000E 01	-0.109268E 04	0.437715E 02	0.1616245E 00
0.4000000E 01	-0.961125E 03	0.433404E 02	0.1790455E 00
0.4400000E 01	-0.268050E 03	0.430866E 02	0.1963215E 00

Table B1 (cont'd).

TEST NO. 79-25
MATERIAL: SNOW
DENSITY: 0.420 G/CC
IMPACT VELOCITY: 199. FT/S 60.7 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 51
LOW PASS FILTER CUTOFF: 1000. HZ
COMMENTS:

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	-0.350527E 02	0.606552E 02	0.000000E 00
0.4000000E 00	-0.148743E 03	0.606197E 02	0.242564E-01
0.8000000E 00	-0.282413E 03	0.605333E 02	0.484686E-01
0.1200000E 01	-0.399702E 03	0.603964E 02	0.726759E-01
0.1600000E 01	-0.529365E 03	0.602119E 02	0.967992E-01
0.2000000E 01	-0.738244E 03	0.599620E 02	0.1208 36E 00
0.2400000E 01	-0.107968E 04	0.596023E 02	0.144754E 00
0.2800000E 01	-0.139572E 04	0.590995E 02	0.168498E 00
0.3200000E 01	-0.116138E 04	0.585630E 02	0.192027E 00
0.3600000E 01	-0.309811E 03	0.582623E 02	0.215381E 00

TEST NO. 79-26
MATERIAL: SNOW
DENSITY: 0.400 G/CC
IMPACT VELOCITY: 201. FT/S 61.3 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 44
LOW PASS FILTER CUTOFF: 1000. HZ
COMMENTS: TARGET TIPPED 10-15 DEGREES FROM VERTICAL.

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	0.979033E 02	0.612648E 02	0.000000E 00
0.4000000E 00	0.489557E 03	0.613726E 02	0.245225E-01
0.8000000E 00	0.822622E 03	0.616499E 02	0.491226E-01
0.1200000E 01	0.412460E 03	0.619239E 02	0.738425E-01
0.1600000E 01	-0.546304E 03	0.619009E 02	0.986195E-01
0.2000000E 01	-0.115464E 04	0.615373E 02	0.123315E 00
0.2400000E 01	-0.945232E 03	0.610937E 02	0.147838E 00
0.2800000E 01	-0.306593E 03	0.609416E 02	0.172217E 00

TEST NO. 79-27
MATERIAL: SNOW
DENSITY: 0.400 G/CC
IMPACT VELOCITY: 294. FT/S 89.6 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 40
LOW PASS FILTER CUTOFF: 1000. HZ
COMMENTS: LOST WINDSCREEN.

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	0.374769E 02	0.896112E 02	0.000000E 00
0.4000000E 00	-0.634693E 00	0.896261E 02	0.358478E-01
0.8000000E 00	-0.348197E 03	0.895663E 02	0.716906E-01
0.1200000E 01	-0.860962E 03	0.893235E 02	0.107475E 00
0.1600000E 01	-0.112205E 04	0.889128E 02	0.143125E 00
0.2000000E 01	-0.868007E 03	0.884986E 02	0.178604E 00
0.2400000E 01	-0.291319E 03	0.882646E 02	0.213950E 00

TEST NO. 79-28
MATERIAL: SNOW
DENSITY: 0.420 G/CC
IMPACT VELOCITY: 301. FT/S 91.7 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 42
LOW PASS FILTER CUTOFF: 1000. HZ
COMMENTS:

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	-0.104738E 03	0.917448E 02	0.000000E 00
0.4000000E 00	0.252506E 03	0.917550E 02	0.366955E-01
0.8000000E 00	0.101490E 04	0.920388E 02	0.734384E-01
0.1200000E 01	0.114970E 04	0.924811E 02	0.110335E 00
0.1600000E 01	0.106259E 03	0.927574E 02	0.147395E 00
0.2000000E 01	-0.862245E 03	0.925775E 02	0.184475E 00
0.2400000E 01	-0.692420E 03	0.922335E 02	0.221434E 00
0.2800000E 01	-0.845409E 02	0.920652E 02	0.258290E 00

Table B1 (cont'd).

TEST NO. 79-29
MATERIAL: WET NYLON
DENSITY: 0.180 G/CC
IMPACT VELOCITY: 195. FT/S 59.4 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 76
LOW PASS FILTER CUTOFF: 1000. HZ
COMMENTS:

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	0.225173E 02	0.594360E 02	0.0000000E 00
0.4000000E 00	0.494291E 02	0.594523E 02	0.237773E-01
0.8000000E 00	-0.193782E 01	0.594644E 02	0.475612E-01
0.1200000E 01	-0.104921E 03	0.594433E 02	0.713440E-01
0.1600000E 01	-0.172712E 03	0.593855E 02	0.951106E-01
0.2000000E 01	-0.167413E 03	0.593156E 02	0.1188851E 00
0.2400000E 01	-0.143981E 03	0.592540E 02	0.142564E 00
0.2800000E 01	-0.168325E 03	0.591935E 02	0.166254E 00
0.3200000E 01	-0.235364E 03	0.591152E 02	0.189916E 00
0.3600000E 01	-0.283099E 03	0.590178E 02	0.213541E 00
0.4000000E 01	-0.251221E 03	0.589979E 02	0.237121E 00
0.4400000E 01	-0.151379E 03	0.588170E 02	0.260663E 00
0.4800000E 01	-0.166170E 03	0.587614E 02	0.284179E 00
0.5200000E 01	-0.475651E 03	0.586438E 02	0.307663E 00
0.5600000E 01	-0.726337E 03	0.583872E 02	0.331072E 00
0.6000000E 01	-0.368937E 03	0.581492E 02	0.354374E 00

TEST NO. 79-30
MATERIAL: DRY NYLON
DENSITY: 0.090 G/CC
IMPACT VELOCITY: 201. FT/S 61.3 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 67
LOW PASS FILTER CUTOFF: 1000. HZ
COMMENTS:

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	0.706373E 02	0.612648E 02	0.0000000E 00
0.4000000E 00	0.661668E 02	0.612945E 02	0.245119E-01
0.8000000E 00	-0.297282E 01	0.613048E 02	0.490333E-01
0.1200000E 01	-0.713204E 02	0.612922E 02	0.735542E-01
0.1600000E 01	-0.783233E 02	0.612602E 02	0.980647E-01
0.2000000E 01	-0.520065E 02	0.612344E 02	0.122563E 00
0.2400000E 01	-0.669717E 02	0.612125E 02	0.147053E 00
0.2800000E 01	-0.125247E 03	0.611744E 02	0.171531E 00
0.3200000E 01	-0.165239E 03	0.611152E 02	0.195989E 00
0.3600000E 01	-0.186110E 03	0.610448E 02	0.220421E 00
0.4000000E 01	-0.168826E 03	0.609707E 02	0.244824E 00
0.4400000E 01	0.141923E 02	0.609339E 02	0.269203E 00
0.4800000E 01	0.215312E 03	0.609861E 02	0.293584E 00
0.5200000E 01	0.956675E 02	0.610580E 02	0.317994E 00

TEST NO. 79-31
MATERIAL: DRY NYLON
DENSITY: 0.180 G/CC
IMPACT VELOCITY: 299. FT/S 91.1 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 48
LOW PASS FILTER CUTOFF: 1000. HZ
COMMENTS: ACCELEROMETER DAMAGED.

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	-0.629311E 02	0.911352E 02	0.0000000E 00
0.4000000E 00	-0.136034E 03	0.910955E 02	0.364470E-01
0.8000000E 00	-0.183156E 03	0.910301E 02	0.728727E-01
0.1200000E 01	-0.204776E 03	0.909530E 02	0.1092698E 00
0.1600000E 01	-0.286802E 03	0.908572E 02	0.1456532E 00
0.2000000E 01	-0.362808E 03	0.907230E 02	0.181949E 00
0.2400000E 01	-0.169307E 03	0.906056E 02	0.218213E 00
0.2800000E 01	0.191964E 03	0.906134E 02	0.254452E 00
0.3200000E 01	0.180946E 03	0.907041E 02	0.290715E 00

TEST NO. 79-32
MATERIAL: WET NYLON
DENSITY: 0.150 G/CC
IMPACT VELOCITY: 287. FT/S 87.5 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 57
LOW PASS FILTER CUTOFF: 1000. HZ
COMMENTS: TARGET SLUMPED.

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	0.480443E 02	0.874776E 02	0.0000000E 00
0.4000000E 00	0.865035E 01	0.874887E 02	0.349937E-01
0.8000000E 00	-0.117652E 02	0.874876E 02	0.699892E-01
0.1200000E 01	-0.609401E 02	0.874753E 02	0.1049882E 00
0.1600000E 01	-0.181270E 03	0.874243E 02	0.139964E 00
0.2000000E 01	-0.296230E 03	0.873225E 02	0.174918E 00
0.2400000E 01	-0.316939E 03	0.872049E 02	0.209927E 00
0.2800000E 01	-0.341567E 03	0.870783E 02	0.244894E 00
0.3200000E 01	-0.353831E 03	0.869375E 02	0.279886E 00
0.3600000E 01	-0.271614E 03	0.868087E 02	0.314836E 00
0.4000000E 01	-0.109346E 03	0.867317E 02	0.349842E 00
0.4400000E 01	-0.329481E 01	0.867134E 02	0.384829E 00

Table B1 (cont'd).

TEST NO. 79-33
MATERIAL: STYROFOAM
DENSITY: 0.032 G/CC
IMPACT VELOCITY: 93. FT/S 28.3 M/S
SAMPLING RATE: 10000. HZ NO. OF DATA POINTS: 97
LOW PASS FILTER CUTOFF: 1000. HZ
COMMENTS: BAD DATA

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	0.732328E 02	0.283464E 02	0.0000000E 00
0.4000000E 00	-0.295971E 01	0.283629E 02	0.113428E-01
0.8000000E 00	-0.107006E 03	0.283401E 02	0.226847E-01
0.1200000E 01	-0.159098E 03	0.282849E 02	0.340103E-01
0.1600000E 01	-0.186944E 03	0.282165E 02	0.453109E-01
0.2000000E 01	-0.294211E 03	0.281241E 02	0.565803E-01
0.2400000E 01	-0.509040E 03	0.279657E 02	0.678210E-01
0.2800000E 01	-0.725554E 03	0.277166E 02	0.789401E-01
0.3200000E 01	-0.830095E 03	0.274013E 02	0.899649E-01
0.3600000E 01	-0.839270E 03	0.270651E 02	0.100858E 00
0.4000000E 01	-0.892607E 03	0.267237E 02	0.111617E 00
0.4400000E 01	-0.109915E 04	0.263298E 02	0.122230E 00
0.4800000E 01	-0.131975E 04	0.258412E 02	0.132667E 00
0.5200000E 01	-0.120750E 04	0.253210E 02	0.142898E 00
0.5600000E 01	-0.672621E 03	0.249358E 02	0.152943E 00
0.6000000E 01	-0.105044E 03	0.247872E 02	0.162880E 00
0.6400000E 01	0.127857E 03	0.248035E 02	0.172795E 00
0.6800000E 01	0.735431E 02	0.248496E 02	0.182727E 00
0.7200000E 01	-0.103110E 03	0.248460E 02	0.192668E 00
0.7600000E 01	-0.274535E 03	0.247669E 02	0.202593E 00
0.8000000E 01	-0.212049E 03	0.246599E 02	0.212477E 00
0.8400000E 01	-0.891428E 01	0.246198E 02	0.222330E 00

Table B2. Average values of three tests at listed velocities (50 ft/s = 15 m/s, 75 ft/s = 23 m/s, 100 ft/s = 31 m/s, 150 ft/s = 46 m/s, 200 ft/s = 61 m/s).

SNOW 50 FPS 3 TESTS

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	0.635983E 00	0.153416E 02	0.0000000E 00
0.4000000E 00	-0.664668E 01	0.153405E 02	0.6136500E-02
0.8000000E 00	-0.179168E 02	0.153357E 02	0.1227195E-01
0.1200000E 01	-0.323962E 02	0.153258E 02	0.1840435E-01
0.1600000E 01	-0.493167E 02	0.153095E 02	0.2453316E-01
0.2000000E 01	-0.681170E 02	0.152860E 02	0.3065095E-01
0.2400000E 01	-0.880831E 02	0.152548E 02	0.3675935E-01
0.2800000E 01	-0.108023E 03	0.152156E 02	0.4285836E-01
0.3200000E 01	-0.126545E 03	0.151686E 02	0.4893046E-01
0.3600000E 01	-0.142748E 03	0.151146E 02	0.5498756E-01
0.4000000E 01	-0.156623E 03	0.150547E 02	0.6102146E-01
0.4400000E 01	-0.168743E 03	0.149896E 02	0.6703046E-01
0.4800000E 01	-0.179648E 03	0.149198E 02	0.7301246E-01
0.5200000E 01	-0.189560E 03	0.148460E 02	0.7896576E-01
0.5600000E 01	-0.198599E 03	0.147683E 02	0.8488866E-01
0.6000000E 01	-0.207080E 03	0.146872E 02	0.9077976E-01
0.6400000E 01	-0.215481E 03	0.146026E 02	0.9663786E-01
0.6800000E 01	-0.224146E 03	0.145147E 02	0.1024616E 00
0.7200000E 01	-0.233095E 03	0.144233E 02	0.1082496E 00
0.7600000E 01	-0.241974E 03	0.143283E 02	0.1139996E 00
0.8000000E 01	-0.250309E 03	0.142298E 02	0.1197116E 00
0.8400000E 01	-0.257693E 03	0.141281E 02	0.1253836E 00
0.8800000E 01	-0.264451E 03	0.140237E 02	0.1310136E 00
0.9200000E 01	-0.272363E 03	0.139164E 02	0.1366016E 00
0.9600000E 01	-0.284581E 03	0.138052E 02	0.1421466E 00
0.1000000E 02	-0.303751E 03	0.136878E 02	0.1476446E 00
0.1040000E 02	-0.328638E 03	0.135614E 02	0.1530956E 00
0.1080000E 02	-0.351539E 03	0.134261E 02	0.1584926E 00
0.1120000E 02	-0.359647E 03	0.132822E 02	0.1638346E 00
0.1160000E 02	-0.342232E 03	0.131419E 02	0.1691186E 00

SNOW 75 FPS 3 TESTS

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	-0.116672E 02	0.231648E 02	0.0000000E 00
0.4000000E 00	-0.358960E 02	0.231555E 02	0.9264346E-02
0.8000000E 00	-0.665843E 02	0.231352E 02	0.1852286E-01
0.1200000E 01	-0.107700E 03	0.231007E 02	0.2777056E-01
0.1600000E 01	-0.159194E 03	0.230476E 02	0.3700086E-01
0.2000000E 01	-0.211130E 03	0.229733E 02	0.4620566E-01
0.2400000E 01	-0.249941E 03	0.228805E 02	0.5537686E-01
0.2800000E 01	-0.271639E 03	0.227757E 02	0.6450826E-01
0.3200000E 01	-0.286555E 03	0.226641E 02	0.7359646E-01
0.3600000E 01	-0.308492E 03	0.225454E 02	0.8263856E-01
0.4000000E 01	-0.339898E 03	0.224159E 02	0.9163116E-01
0.4400000E 01	-0.370018E 03	0.222737E 02	0.1005706E 00
0.4800000E 01	-0.387533E 03	0.221217E 02	0.1094496E 00
0.5200000E 01	-0.394458E 03	0.219652E 02	0.1182666E 00
0.5600000E 01	-0.409932E 03	0.218050E 02	0.1270206E 00
0.6000000E 01	-0.457904E 03	0.216326E 02	0.1357086E 00
0.6400000E 01	-0.534531E 03	0.214344E 02	0.1443236E 00
0.6800000E 01	-0.575519E 03	0.212087E 02	0.1528526E 00
0.7200000E 01	-0.483393E 03	0.209926E 02	0.1612916E 00
0.7600000E 01	-0.242037E 03	0.208443E 02	0.1696556E 00

SNOW 100 FPS 3 TESTS

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	0.133782E 02	0.301752E 02	0.0000000E 00
0.4000000E 00	-0.232453E 02	0.301744E 02	0.1207046E-01
0.8000000E 00	-0.892297E 02	0.301524E 02	0.2413666E-01
0.1200000E 01	-0.153533E 03	0.301034E 02	0.3618856E-01
0.1600000E 01	-0.198131E 03	0.300325E 02	0.4821625E-01
0.2000000E 01	-0.235397E 03	0.299459E 02	0.6021236E-01
0.2400000E 01	-0.284763E 03	0.298424E 02	0.7217056E-01
0.2800000E 01	-0.342629E 03	0.297168E 02	0.8408306E-01
0.3200000E 01	-0.386891E 03	0.295702E 02	0.9594086E-01
0.3600000E 01	-0.411906E 03	0.294101E 02	0.1077376E 00
0.4000000E 01	-0.448474E 03	0.292391E 02	0.1194676E 00
0.4400000E 01	-0.531058E 03	0.290447E 02	0.1311256E 00
0.4800000E 01	-0.627557E 03	0.288119E 02	0.1426986E 00
0.5200000E 01	-0.617304E 03	0.285573E 02	0.1541716E 00
0.5600000E 01	-0.405018E 03	0.283467E 02	0.1655496E 00
0.6000000E 01	-0.107358E 03	0.282462E 02	0.1768646E 00

Table B2 (cont'd).

SNOW 150 FPS 2 TESTS

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	-0.211302E 02	0.454152E 02	0.0000000E 00
0.4000000E 00	-0.613421E 02	0.453950E 02	0.181628E-01
0.8000000E 00	-0.154169E 03	0.453483E 02	0.363123E-01
0.1200000E 01	-0.241546E 03	0.452697E 02	0.544370E-01
0.1600000E 01	-0.354864E 03	0.451513E 02	0.725225E-01
0.2000000E 01	-0.480008E 03	0.449838E 02	0.905511E-01
0.2400000E 01	-0.560482E 03	0.447738E 02	0.108503E 00
0.2800000E 01	-0.615983E 03	0.445395E 02	0.126366E 00
0.3200000E 01	-0.745167E 03	0.442698E 02	0.144130E 00
0.3600000E 01	-0.832645E 03	0.439476E 02	0.161775E 00
0.4000000E 01	-0.963123E 03	0.436553E 02	0.179292E 00

SNOW 200 FPS 2 TESTS

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	0.204410E 02	0.608076E 02	0.0000000E 00
0.4000000E 00	0.105098E 01	0.608131E 02	0.243243E-01
0.8000000E 00	-0.903010E 02	0.607983E 02	0.486477E-01
0.1200000E 01	-0.264432E 03	0.607290E 02	0.729553E-01
0.1600000E 01	-0.449040E 03	0.605856E 02	0.972205E-01
0.2000000E 01	-0.646042E 03	0.603687E 02	0.121413E 00
0.2400000E 01	-0.946972E 03	0.600532E 02	0.145502E 00

NYLON 100 FPS 3 TESTS

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	0.256408E 01	0.302768E 02	0.0000000E 00
0.4000000E 00	-0.821003E 01	0.302762E 02	0.121107E-01
0.8000000E 00	-0.325873E 02	0.302683E 02	0.242199E-01
0.1200000E 01	-0.562306E 02	0.302503E 02	0.363239E-01
0.1600000E 01	-0.694716E 02	0.302248E 02	0.484190E-01
0.2000000E 01	-0.777337E 02	0.301954E 02	0.605031E-01
0.2400000E 01	-0.906585E 02	0.301619E 02	0.725747E-01
0.2800000E 01	-0.106697E 03	0.301224E 02	0.846317E-01
0.3200000E 01	-0.115532E 03	0.300776E 02	0.966719E-01
0.3600000E 01	-0.113843E 03	0.300314E 02	0.108694E 00
0.4000000E 01	-0.111149E 03	0.299866E 02	0.120697E 00
0.4400000E 01	-0.118275E 03	0.299411E 02	0.132682E 00
0.4800000E 01	-0.135080E 03	0.298906E 02	0.144649E 00
0.5200000E 01	-0.151260E 03	0.298331E 02	0.156594E 00
0.5600000E 01	-0.154254E 03	0.297714E 02	0.168515E 00
0.6000000E 01	-0.135721E 03	0.297127E 02	0.180411E 00
0.6400000E 01	-0.101421E 03	0.296650E 02	0.192287E 00

STYROFOAM 100 FPS 3 TESTS

TIME, MS	ACCEL, M/S**2	VEL, M/S	DIST, M
0.0000000E 00	-0.195465E 02	0.297688E 02	0.0000000E 00
0.4000000E 00	-0.142457E 02	0.297712E 02	0.119084E-01
0.8000000E 00	-0.796908E 02	0.297530E 02	0.238140E-01
0.1200000E 01	-0.150932E 03	0.297068E 02	0.357069E-01
0.1600000E 01	-0.229349E 03	0.296313E 02	0.475754E-01
0.2000000E 01	-0.345043E 03	0.295181E 02	0.594068E-01
0.2400000E 01	-0.508481E 03	0.293485E 02	0.711821E-01
0.2800000E 01	-0.675659E 03	0.291107E 02	0.828760E-01
0.3200000E 01	-0.790535E 03	0.288154E 02	0.944625E-01
0.3600000E 01	-0.860231E 03	0.284846E 02	0.105923E 00
0.4000000E 01	-0.959013E 03	0.281230E 02	0.117246E 00

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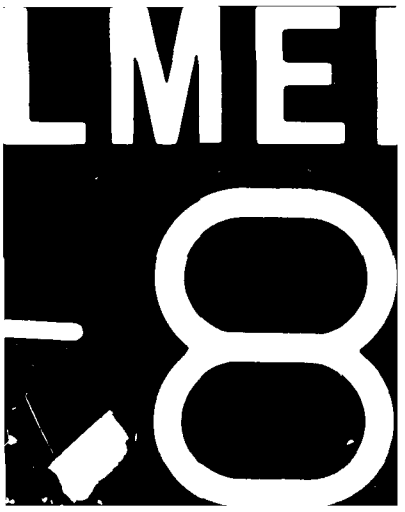
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